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TABLE OF CONTENTS.

Editorial Articles.

Page

Announcement 1
Retrospect 3
Pure food and drug laws 43
The Lloyd library 85
Pharmacy, professional position of 127
Registration of trade marks 128
About the practice of Christian Science 129
Medical advertisements:—
The daily press 169
The medical journals 171
The position of the pharmacist 174
Pharmaceutical education aud legislation 211
Change in rules of Michigan Board of Pharmacy 253
Education and legislation 254
Fellowship in chemistry, University of Michigan 255
War Tax 257
Recent changes in pharmaceutical manufacturing 285
American Pharmaceutical Association 321
American Association for the Advancement of Science 322
American Pharmaceutical Association 363
Johann Eliza de Vrij 369
Professor Lloyd's address at Detroit in 1888 405
The war tax and some of its results 406
The Behring patent and its effect on the remodelling of our patent laws 407
Annual gatherings 447
Affiliation with A. A. A. S 448

Original Contributions.

Antipyrine and spirit of nitrous ether. By *Chas. Caspari Jr* 12
Belladonna, the assay of fluid extract of. By *W. A. Puckner* 303
Belladonna leaves, the assay of. By *W. A. Puckner* 180
Belladonna leaves, the alkaloidal value of. By *W. A. Puckner* 324
Benzinum U. S. P. By *Edward Kremers* 221
Carbon dioxide from fermentation. By Dr. *P. Fischer* 214
Early phases in the development of pharmaceutical legislation in Wisconsin. By *Edward Kremers* 56, 136, 183, 223
Fragmentary notes from the reports of two early naturalists on North America. By *Fred. Hoffmann* 260, 296

Page

Gaultheria, oil of. By *John Uri Lloyd*..... 176
Gums. By *J. F. Hanausek*..... 25
Hibiscus esculentus. By *F. G. Egeling*..... 24
Hydrocyanic acid, test for in mitchella repens. By *Richard Fischer*..... 98
Indian and Alexandrian sennas. By *R. H. Denniston*..... 105
Laboratory notes: I. Glycerin; II. Resin; III. Soft soap. By *Ferd. A. Sieker*..... 15
Laboratory notes. By *Ferd. A. Sieker*.....94, 266
Laboratory notes in pharmacognosy. By *Rodney H. True*..... 258
Laurus Sassafras. By *John Uri Lloyd*..... 450
Mustard seed, standards for white and black. By *John Uri Lloyd*..... 328
Methyl salicylate, on the occurrence of. By *Edward Kremers* and *Martha M. James*..... 100
Methyl salicylate, on the volumetric estimation of. By *Edward Kremers* and *Martha M. James*..... 130
Notes on two oils containing pulegone. By *Edward Kremers*..... 412
Opium, note upon the volumetric assay of. By *H. M. Gordin* and *A. B. Prescott*..... 303
Phyto-bezoar, an unusual. By *William Trelease*..... 66
Popular Scandinavian names of drugs and medicines. By *Harold Bruun*.....21, 49, 133
Principal plant substances, a key to. By *Rodney H. True*..... 9
Senega, criticism of a proposed method for the assay of. By *Edward Kremers* and *Martha M. James*..... 45
Trimble, Henry. By *J. U. Lloyd*..... 409

Books Reviewed.

Alpers, William C.: The Pharmacist at Work..... 165
American Institute of Homœopathy: Pharmacopœia of the American Institute of Homœopathy..... 75
Arnold, Dr. *Carl:* Repetitorium der Chemie..... 125
Barnes, Charles Ried: Plant Life..... 439
Beckurts, Dr. *Heinrich:* Jahresbericht der Pharmacie.....168, 357
Benedikt, Dr. *Rudolf:* Analyse der Fette und Wachsarten..... 77
Berendes, Dr. *J.:* Geschichte der Pharmacie..... 164
Bley, Franz: Die Flora des Brockens..... 361
Bocquillon-Limousin, H.: Formulaire des Médicaments Nouveaux pour 1898..... 162
Buchheister, G. A.: Handbuch der Drogisten-Praxis..... 208
Buchheister, G. A.: Vorschriftenbuch für Drogisten..... 480
Dieterich Dr. *Karl:* Helfenberger Annalen 1897..... 279
Engler, Dr. *A.:* Die Vegetation der Erde..... 316
Engler, Dr. *Adolf:* Syllabus der Pflanzenfamilien..... 318
Felter, Dr. *Harvey*, and Dr. *John U. Lloyd:* King's American Dispensatory..... 444
Fischer, A.: Pflanzenphysiologische Abhandlungen von Ernst von Brücke, 1844—1862..... 315
Fischer, Dr. *B.*, und *G. Arends:* Pharmaceutischer Kalender 1899..... 488

Page

Fischer, Dr. *Ferdinand:* Jahresbericht über die Leistungen der Chemischen Technologie ... 37
Friedheim, Prof. Dr. *Carl:* Leitfaden für die quantitative chemische Analyse ... 159
Gaenge, Dr. *C.:* Schlickum's Ausbildung des Apothekerlehrlings ... 403
Gattermann, Dr. *Ludwig:* Die Praxis des organischen Chemikers ... 401
Geissler, Kurt: Der erste Chemieunterricht ... 360
Hager, H. Jun.: Die Wolken am Himmel des Lebens ... 401
Hare, Dr. *Hobart Amory:* A Text-Book of Practical Therapeutics ... 82
Harnack, Erich: Die Hauptsachen der Chemie ... 84
Hilger, Dr. *A.:* Vierteljahresschrift über die Fortschritte auf dem Gebiete der Chemie der Nahrungs- und Genussmittel ... 284
Hoff, J. H. van't: Ueber die zunehmende Bedeutung der anorganischen Chemie ... 483
Holfert, Dr. *J.:* Volksthümliche Arzneimittelnamen ... 441
Jacobsen, Dr. *Emil:* Chemisch-technisches Repertorium ... 400
Jörgensen, Alfred: Die Mikroorganismen der Gährungsindustrie ... 79
Kahlbaum, Georg W. A., und *August Hoffmann:* Die Einführung der Lavoisier'schen Theorie im Besonderen in Deutschland ... 250
Kannenberg, Karl: Kleinasiens Naturschätze ... 39
Kippenberger, Dr. *Carl:* Grundlagen für den Nachweis von Giftstoffen bei gerichtlich-chemischen Untersuchungen ... 122
Kromayer, Dr. Med. *Ernst:* Zur Austilgung der Syphilis ... 249
Ladd, E. F.: A Manual of Quantitative Chemical Analysis ... 356
Landolt, Dr. *H.*: Graham-Otto's ausführliches Lehrbuch der Chemie ... 485
Larsar-Cohn, Prof. Dr.: Praxis der Harnanalyse ... 252
Lea Brothers & Co.: The Year-Book of Treatment for 1898 ... 207
Lueger, Otto: Lexikon der gesamten Technik und ihrer Hilfswissenschaften ... 34, 320
Maubach, Hugo: Das Charakterbild des Apothekers in der Litteratur ... 40
Meyer, Dr. *Hans:* Anleitung zur quantitativen Bestimmung der Atomgruppen ... 79
Meyer's Conversations-Lexicon: Band 17 ... 33
Meyer's Conversations-Lexicon: 18. Band ... 314
Millspaugh, Charles Frederick: Contribution III to the Coastal and Plain Flora of Yucatan ... 245
Mindes, J.: Manuale der neuen Arzneimittel ... 281
Missouri Botanical Garden: Eighth Annual Report ... 36
Missouri Botanical Garden: Ninth Annual Report ... 282
Morris, Henry, M. D.: Essentials of Materia Medica, Therapeutics and Prescription writing ... 484
Mylius, Dr. *E.:* Schule der Pharmacie ... 124
Nietzki, Dr. *Rudolf:* Chemie der organischen Farbstoffe ... 209
Noyes, Dr. *W. A.:* Organic Chemistry for the Laboratory ... 42
Ostwald, W.: Die wissenschaftlichen Grundlagen der analytischen Chemie 80
Pax, Dr. *F.:* Vol. 2. Grundzüge der Pflanzenverbreitung in den Karpathen ... 316

Page

Richet, Charles: Dictionnaire de Physiologie.....121, 246
Rudolphi, Dr. *Max:* Allgemeine und physikalische Chemie..... 319
Sadtler, Prof. *Sam'l P.*, and Prof. *Henry Trimble:* A textbook of Chemistry..... 443, 481
Schlickum, Oscar: Apothekerkalender für das Deutsche Reich..... 82
Schmidt, Dr. *Ernst:* Ausführliches Lehrbuch der pharmaceutischen Chemie 317
Simon, Dr. *W.:* Manual of Chemistry..... 487
Strasburger, Dr. *Edward*, Dr. *Fritz Noll*, Dr. *Heinrich Schenck* und Dr. *A. F. W. Schimper:* Lehrbuch der Botanik für Hochschulen..... 360
Thompson, C. J. C.: The Mystery and Romance of Alchemy and Pharmacy..... 487
Thoms, Dr. *Hermann:* Schule der Pharmacie..... 166
Tschirch, Dr. *A.*, und Dr. *O. Oesterle:* Anatomischer Atlas der Pharmakognosie und Nahrungsmittelkunde.....168, 446
Ulzer, Prof. *F.*, und Dr. *A. Fraenkel:* Anleitung zur chemisch-technischen Analyse..... 163
Venable, Dr. *F. P.:* A Short History of Chemistry..... 439
Vogtherr, Dr. *Max:* Kohler's neueste und wichtigste medicinal Pflanzen in naturgetreuen Abbildungen.....126, 163, 280
Wells, Horace L.: Manual of Qualitative Chemical Analysis. By the late Dr. C. Remigius Fresenius. Authorized translation..... 161
Wells, H. L.: Laboratory Guide in Qualitative Chemical Analysis..... 402
Wells, Dr. *J. S. C.:* A Short Course in Inorganic Qualitative Analysis for Engineering Students..... 357

INDEX OF AUTHORS.

Alden, F. W..... 414
Brunn, Harold.....21, 49, 133
Caspari, Prof. Chas. Jr..... 12
Denniston, R. H..... 105
Egeling, F. G..... 24
Fischer, Dr. P..... 214
Fischer, Richard..... 98
Gage, Florence M..... 412
Gordin, H. M..... 303
Hanausek. J. F..... 25
Hoffmann, Fred.....260, 296
James, Martha M.....45, 100, 130
Kremers, Dr. Edward.....45, 56, 100, 130, 136, 183, 221, 223
Lloyd, Prof. John Uri.....176, 328, 409, 450
Prescott, Prof. A. B..... 303
Puckner, Prof. W. A.....180, 303, 324
Sieker, Ferd. A.....15, 94, 266
Trelease, William..... 66
True, Dr. Rodney H.....9, 258

SUBJECT INDEX.

(Pages of Supplement in Parenthesis.)

Page

Abies pectinata D. C..... 240
Abutilon Indicum Don..... 429
Acacia Adansonii Guill. et Perr..... 429
— — Angico Mart..... 28
— — Arabica Willd.....27-429
— — giraffe Willd..... 27
— — gummifera Willd..... 26
— — horrida Willd.....27-195
— — leucophloea Benth..... 29
— — pycnantha Benth..... 27
— — stenocarpa Hochst..... 26
— — Senegal Willd..... 26
— — Verek Guillem. and Perrott..... 25
Acanthaceae 430
Acetone as a solvent in preparing the official resins..... 156
Action of solutions on the sense of taste 381
Aether Petrolei..... 222
Aceto-para-phenetidine 476
Acet-p-Toluide 474
Acetylated Amines and derivatives..... 474
Affiliation with A. A. A. S..... 448
African Copals..... (21)
Albumins and some types of proteid digestion 392
Albumoses 144
Albumen—iodide of the thyroid gland.. 204
Albuminuria, the common reagents for the detection of, their application and comparative efficiency..... 340
Alcoholic fermentation without yeast cells 143-144
Alcohol, the determination of small quantities of 269
Alcoholic distillates, on the gradual increase in density of, or of mixtures of alcohol and water..... 419
Alkaloid, a probable new volatile..... 350
— — in tartaxacum root..... 374
Alkaloids, detection of..... 192
— — poisonous, from the Borage family 147
— — extraction of..... 233
— — distribution of, in cinchona plant. 197
— — constitution and synthesis of some of the most important..... 233
— — in tinctures, the estimation of.... 338
Alkaloidal principle in wines..... 233
— — periodides and the volumetric estimation of alkaloids as higher periodides 375
Alinit 271
Aloes, chemistry of..... 345
Amarol 390
— — Chemical Society, Cincinnati section ..... (89)
American Pharmaceutical Association (50), (58), (65), (81),.....321-364
American Association, 1898..... (43)
— — Association for the Advancement of Science.....(58), 322 447
— — Chemical Society.....(10)
— — Squaw-root, observations on..... 115
Amomum Danielli..... 241
Amyl nitrite and spirits of nitrous
Ammonia baccifera L..... 430
ether, examination of commercial samples of, and a new method for their valuation..... 270

Page

Amygdophenin 478
Amylolytic ferments..... 390
Anaesthesia .....(35)
Anagyrine 191
Anchusa officinalis..... 147
Andromeda Leschenaultii..... 105
Anemonin in Anemone Pulsatilla..... 383
Anesol 390
Aniline derivatives, identification of... 424
Annual gatherings..... 447
Anonaceae 430
Anona muricata L..... 430
Announcement 1
Anogeisus latifolia..... 28
Antifebrine 474
Antipyretics 474
Antipyrine iodometric estimation of... 190
— — and spirit of nitrous ether..... 12
Antiseptics, new..... 157
Antisipsine 474
Antitoxine 288
Apocynaceae 430
Apolysin 476
Apothecaries' Garden, London.....(84)
Areca Catechu L..... 272
Arkansas Pharmaceutical Association..(50)
Arisaema Triphyllum, experiments on morphology of..... 115
Aromatic waters..... 396
Arthonia complanata Muell..... 425
Ash of vegetable drugs.....152-428
Aspilia latifolia O. A. H..... 430
Association of German Men of Science and Physicians.....(82)
Astragalus adscendens Boiss. and Hausk. 28
— — brachycalix Fisch..... 28
— — cylleneus Boiss..... 28
— — gummifer Labill..... 28
— — microcephalus Willd..... 28
— — verus Oliv..... 28
Atmosphere, recently discovered constituents of..... 460
Atropa Belladonna, comparative structure of the leaves of..... 71
Atropine 234
— — detection of in urine..... 191
Avicermia africana Beauv..... 430

Bacilli Argenti colloidalis..... 396
Balanitis Aegyptiaca..... 429
Balsamodendron africanum Arn..... 429
Bassorin 29
Bauhinia tomentosa L..... 429
— — reticulata D. C..... 429
Bearberry Leaves, yellow coloring matter of..... 350
Behring patent and its effect on the remodeling of our laws..... 407
Belladonna, the assay of fluid extract.. 303
— — leaves, assay of..... 180
— — leaves, the alkaloidal value of.... 324
— — plasters, assay of..... 199
Benzanilide 474
Benzene theory, conception of.....(36)
Benzinum U. S. P..... 221
Benzoin, liquid, for benzoinating lard.. 155
— — odoriferum 102
Betulaceae 101

Page

Betula alba..... 101
— — lenta L.....101-176
— — lutea Michaux..... 102
Bibliography ..... (5), (12), (18), (27), (37), (48), (62), (69), (76), (85)
Bibliography ..... (92)
Bigoniaceae..... 430
Bitter almond water, assay of..... 193
Bixineae 430
Black finish for table tops..... 419
Blumera lacera D. C..... 430
Borraginaceae, coloring matter of..... 351
Botanical Gardens in Jamaica.....(2)
— — Nomenclature 272
Brassica juncea Hook..... 430
Brayera anthelmintica..... 242
British Ph. Revision Committee, report of..... (1)
British Pharmaceutical Conference....(73).
Bromamide 474
Bromine and Iodide, solubility of in water 270
Brucea antidysenterica Mill..... 429
Bryonia laciniosa L..... 430
Bryophyllum calycinum Salisb..... 430
Bunsen burner, a new..... 231
Burseraceæ 429

Cacao preparation in Cameroon..... 244
Caesalpiniaceae 429
Caffeine 235
Caffeïne sodium benzoate..... 269
Calcium phosphate and oxalate..... 11
Calabar beans, false..... 383
Calendula 347
— — officinalis 258
Calumba 146
Canthium Afzelianum Hiern..... 430
Caoutchouc from Roots..... 242
Capparideae 430
Capsicums, The..... 350
Carbon dioxide from fermentation..... 214
Carbonic dioxide available in the official granular effervescent preparations 394
Caropa guyanensis Aubl..... 429
Carthamus 347
Cassia absus L..... 429
— — alata L..... 429
Castile Soap 94-267
Cathartic acid in rhubarb..... 374
Cearin 390
Cedar leaf oil..... 309
Celastrineæ 429
Celastrus Senegalensis Lam..... 429
Ceratonia Siliqua, seed of..... 149
Chailletiaceæ 429
Chailletia toxicaria Don..... 429
Chamaecyparis sphaeroidea 309
Chemical and industrial aspects of volatile oils..... 342
Chicago College of Pharmacy..... (41)
Chillies and Capsicums..... 240
Chinetum or Cinchona Febrifuge.....(27)
Chloralhydrate as solvent for alkaloids. 233
Choline and Trigonelline, occurrence of in strophanthus-seeds..... 144
Chondodendron tomentosum..... 385
Christian science..... 129
Cinchona Alkaloids, the volumetric estimation of..... 377
— — alkaloids, in grafts, seedlings and cuttings 241
— — from West Africa..... 242
— — plant, distribution of alkaloids in. 197
— — pahudiana 242
— — succirubra 242
Cinnaraceae 429

Page

Cissampelos Pareira L..... 430
Citranella oil..... (94)
Citrophen 476
Citro-p-phenetidine 476
Citrullus Colocynthis..... 343
Citric Acid, of different strength, on the specific gravities (apparent) of solutions of..... 419
Clematis grandiflora D. C..... 430
Clitoria Ternata L..... 429
Cloves ..... (29)
Clove tree 384
Cocaine 235
— — Hydriodate 275
— — manufacture in India..... 244
— — and corrosive sublimate, a clear solution of..... 155
Cocculus Leaeba D. C..... 430
Cochineal in the Canary Islands..... 478
Cochinine 192
Cochlospermum gossipium..... 25
— — tinctorium Rich..... 430
Cod Liver Oil..... (30)
Codeine, preparation of..... 191
Colchicine 192
Coloring of antiseptic solutions..... 351
— — matter of Borraginaceae..... 351
Combretaceae 430
Commelina, a species of..... 344
Comparative accuracy of titrimetric and gasometric methods of estimating hydrogen dioxide in presence of various preservative agents..... 238
— — structure of the leaves of datura stramonium, atropa belladonna and hyoscyamus niger..... 71
Comparison of the standard methods for estimation of starch..... 201
— — of the English and German works on the genera of plants, with special reference to the United States pharmacopœia 386
Compositae 430
Compound carbonic esters..... 379
Concentrated Oil of Lemon, notes on.. 380
Convallaria majalis, poisoning by..... 114
Convolvulaceae 430
Contributors to pharm. science passed away 8
Co-operation, a failure in..... (15)
Copaifera Guibourtiana Benth..... 429
Corchorus fascicularis L..... 429
Corrosive sublimate..... 351
Cotyledon orbiculata L..... 430
Commercial ..... (94)
Commercial.....(7), (15), (20), (29), (87)
— — varieties of dill and their essential oils 383
Coronium 460
Cosapyrine 474
Crassulaceae 430
Crataeva religiosa Forst..... 430
Credé's silver compounds..... 353
Criticism of a proposed method for the assay of senega..... 45
Crocus 347
Crotolaria verrucosa L..... 429
— — retusa L..... 429
Cruciferae 430
Crude caustic soda sold in the market as caustic potash..... 337
Cucumis Prophetarum L..... 430
Cucurbitaceae 430
Curare and curare-alkaloid..... 198
Cyclic Sulfonals..... 194
Cynoglossum officinale..... 147

Page

Daily press..... 169
Dalbergia melanoxylon..... 429
Datura stramonium, comparative structure of the leaves of..... 71
Daviesia latifolia..... 243
— — latifolia, crystalline substance from 147
De Condolles..... (90)
Desichthol 201
Desmodium gangeticum D. C..... 429
— — triflorum D. C..... 429
Determination of the ash of fats..... 379
Diabetic sugar, the detection of..... 269
Diacetanilide 474
Diastase, the chemical nature of..... 143
Diastatic fungi..... 202
Diastasimetry 201
Dicoma tomentosa Cass..... 430
Dicypellium caryophyllatum Nees..... 384
Dieffenbachia sequinum Scht..... 148
Differentiation of bicarbonates from carbonates in mixtures..... 238
Digitalis, standardization of..... 434
Dioscorine 383
Dipsaceae 430
Dogbanes, the common..... 347
Donkin, a poisonous aroid in surinam.. 148
Dragendorff, Georg..... (45)

Early phases in the development of pharmaceutical legislation in Wisconsin 56-136-183-223
Echium vulgare..... 147
Economy, a lesson in..... (16)
Education and legislation.....211-254
Eigon 274
Electrolytic Dissociation, applications of the theory of..... 426
Element, another new..... (53)
Emilia sonchifolia D. C..... 430
Ergot, valuation of..... 433
— — Aseptic 398
Ericaceae 104
Erythroxylaceae 103
Erythroxylum Bolivianum 103
— — (on) Coca Lam.....130-244
Erythrina senegalensis D. C..... 429
Esters of Rhodinol (Geraniol)..... 194
Estimation of grape sugar, milk, sugar, etc., new volum, method for..... 111
Ether, theory and technique of its formation 373
Eucalyptus Oils, commercial..... 147
— — oils of..... 379
Exalgine 474
Export of South China and Indo-China. (30)

Fatty oils..... 11
Fellowship in chemistry, U. of Michigan 255
Ferralbumose 157
Feronia elephantum Corr..... 27
Ferrum Redactum, B. P., 1898, notes on 393
Ficoideae 429
Field Columbian Museum..... (33)
Fifty years ago..... 195
Flask for washing and drying gases.... 141
Forcefilter flask, a new..... 333
Formaldehyde, sterilization with..... 194
Formalin for the denaturalization of alcohol 155
Fragmentary notes from the reports of two early naturalists on North America 260-296
Fraxinus Americana L., the structure of the twigs of..... 70

Page

Gardenia florida..... 241
— — Thunbergii 430
Gas Generator and device for dissolving solids 189
Gaultheria fragrantissima Wall..... 105
— — hispidula 177
— — leucocarpa Blume..... 105
— — procumbens L.....104-176
— — procumbens, oil of..... 176
— — oil of..... 176
Geheimmittel ..... (26)
Geissler, Dr. Ewald..... (91)
Gelsemium, structure of..... 346
Gentianose, preparation of..... 145
Geraniol controversy..... 310
Geranium Oil, acids of..... 378
German apothecaries and the tablet.... (35)
— — Apothecaries Society..... (82)
Geschichtliches über die Apotheken in Danzig ..... (26)
Ginger, note on extract..... 393
Ginseng, culture of..... (20)
Gisekia pharnacioides L..... 429
Glandulen 157
Glycerophosphates, assay of..... 146
Glycerin 14
Gogo, a Philippine Island drug..... 386
Goldsmiths at work..... (27)
Gomme de coco, Haari tapan..... 29
Gossypium arboreum L..... 429
Grain rust, research into..... 72
Grangea maderaspatana..... 430
Granulated Opium, the use of in the making of tincture of opium..... 353
Green extracts of the pharmacopœia.. 392
Guajacum-wood oil..... 310
Guaiacolate of piperidine..... 202
Guaiacolsulfonic acids..... 390
Guaiacyl 389
Gums 11-25
Guttapercha, collection of..... 426

Hai-tao 241
Hamamelin 116
Helichrysum auriculatum Less..... 430
Herpestris Monniera H. B. A. K..... 430
Hibiscus Abelmoschus..... 429
— — esculentus 24
— — sabdariffa L..... 24
Honey, poisoning by..... 114
Homatropine, preparation of..... 191
Horn-eating insects..... 114
Horse meat, on the detection of, by Courlay and Coremon's method.... 337
Husa, a remedy for the opium habit... 426
Hydrocotyle asiatica L..... 429
Hydrocyanic acid gas, effect of, on plants and animals..... 114
— — acid in Mitchella Repens, test for 98
Hydroxylamine and Hydrazine, estimation of..... 145
Hypophosphites, the character and methods of assay of the official..... 380
Hymenæa Courbaril..... 28
Hyosciamine, detection of in urine..... 191
Hyoscymus nigri, comparative structure of the leaves of..... 71
Hypopitys multiflora Scop..... 104

Immunization, artificial, new kind of.. 203
Indian Hemp, storing of..... 336
— — and Alexandrian sennas..... 105
Indigo trade in 1896..... (40)
Indigofera enneaphylla L..... 429
International Pharmaceutical Congress 1900 ..... (68)
Intervenular injections with Argentum colloidale 396

Page

Iodine, the detection of, in sodium chloride, sodium bromide and potassium bromide..... 237
— — potassium iodide solution in the isolation of alkaloids, the use of... 421
Iodide of iron, assay of syrup of..... 340
Iodo-Antifebrine 474
Iodometric estimation of antipyrine.... 190
Ipomoea digitata L..... 430
— — hederacea Jacq..... 430
— — leptophylla Torr..... 154
— — leptophylla, root propagation of.. 154
Ixora radiata Hiern..... 430

Jamaica Ginger..... 151
Joly, Prof. A..... (18)
Jo r, J. F..... (90)
Juniperus virginiana 309
Jussiaea villosa..... 430

Key to principal plant substances..... 9
Khaya senegalensis 429
Kieselguhr 394
Kino 242
— — different methods of preparing.... 427
Kola, preparation of fluid extract of.... 436
— — nuts and extract, the assay of.... 436
— — nuts and kola preparations..... 436
Kousso Honey..... 242
Krypton 460
Kyrofin 477

Laboratory notes..... 267
— — notes in pharmacognosy..... 258
Lactophenin 476
Laminaria bracteata..... 241
Larix occidentalis, an exudation of.... 147
Larrea Mexicana..... 273
Lauraceae 102
Laurus Benzoin L..... 102
Laurus sassafras..... 450
Leguminosae 429
Leprosy in the United States..... 356
Lichenon Cascara Sagrada Bark..... 425
Lining of nutmegs..... 196
Lindera Benzoin Meissn..... 102
Lippia nodiflora Rich..... 430
— — adoensis 430
Liguorice, fluid extract of..... 200
Liquidambar styraciflua L..... 240
Liquid Hydrogen, the discovery of..... (52)
Lloyd library..... 85
— — Curtis Gates..... 89
— — John Uri 87
— — Prof., his address at Detroit in 1888 405
Lloyd Mycological Museum..... (89)
Louchocarpus violaceus Rth..... 148
Lophanthus, oil of..... 240
— — anisatus Benth..... 240
Luffa acutangula Roxb..... 430
Lycopodium 260
Lycorine 192
Lythrareae 430

Maesa lanceolata Forsk..... 430
Malt Extract, on the valuation of..... 110
Malvaceæ 429
Malarin 477
Male Fern, valuation of..... 435
Manganese, distribution of..... 378
Massachusetts Pharmaceutical Association ..... (61)
Measuring pipette and burette, a new.. 232
Medical advertisements..... 169
— — charity, abuse of.....(26), (44)
— — journals 171
— — preparations with soluble silver.. 395

Page

Medicinal plants of Brazil..... 385
— — plants of New Jersey..... 344
— — plants of West Africa..... 429
Meliaceæ 429
Mel Foeniculi..... 155
Memoriam.....(3), (18), (45), (69), (76) (91)
Menispermaceae 430
Mentha Canadensis L..... 412
Menthol, derivatives of..... 373
Mercurous oxycyanide..... 351
Metargon 460
Methacetine 474
Methyl salicylate, on the volumetric estimation of..... 130
— — salicylate, on the occurrence of... 100
Milk sugar, testing of..... 337
Mimoseae 429
Minnesota Pharmaceutical Association. (62)
Missouri Pharmaceutical Association... (50)
Mitchella repens L..... 98
Mixtura Argenti colloidalis..... 396
Mollugo cerviana..... 429
— — spergula L..... 429
Momordica Balsamita L..... 430
Mono-carbonate in bi-carbonate of sodium, the detection of..... 422
Mora excelsa..... 148
Moringa pterygosperma Gärtn..... 30
Morphine, detection of in emulsion of cod liver oil..... 237
— — Quinoline-Ether 340
Mortality among physicians..... (26)
Mucilage in plants..... 272
Mustard seed, white..... 332
— — seed, black..... 328
Mullein flowers, amount of sugar in.... 109
Mydriatic alkaloids, note on the..... 380
Myrsineae 430
Myrtus communis 240

Nekoe, an Indian fish poison..... 148
Neon 460
New York Botanical Garden.....(9), (34)
— — College of Pharmacy....(9), (33), (81)
— — Pharmaceutical Association..... (68)
New Remedies..... 389 474
— — volatile oils..... 273
Newberry library..... (2)
Newlands, J. A. R. ..... (69)
Northwestern University..... (57)

Observations on pharmaceutical progress 3
Ochrolechia Rhamni Purshianæ S..... 425
Oils containing Pulegone, notes on two 412
Oil of Lemon, a new constituent of.... 379
Omphalea megacarpa Hemsl..... 149
— — oleifera 149
Onagraceae 430
Opium, assay of..... 199
— — starch in..... 195
— — note upon the volumetric assay of 303
— — suggested process for deodorized tincture of..... 394
Opotherapeutic preparations..... 275
Opuntia tuna..... 29 473
Orange Oil from Jamaica..... 240
Orris root, cultivation of..... (20)
Oxydases or oxydizing enzymes..... 391
Oxyphenacetin 478

Palaquium gutta..... 426
Papers read at the Baltimore meeting of the A. Ph. A..... (71)
Papilionaceæ 148
Para-acet-amido-phenol 475
Para-amido-phenol 475
Para-phenetidine-furfural 478

Page

Para-phenetidine and derivatives..... 475
Pareira Brava 385
Pectin in Gentian..... 383
Pedalineae 430
Pentosans, solubility of..... 201
Personals ..... (18)
Pertusaria leioplaca (Ach.) Shaer..... 425
Pharmaceutical education and legislation 211
— — registration in Michigan..... 253
— — Society of Great Britain..... (17)
— — co-operation 6
— — manufacturers' standing..... 5
— — practitioners' standing..... 4
— — progress, observations on..... 3
— — archives 2
— — Review, change in..... 2
Pharmacy, professional position of..... 127
Phenacetin 476
Phenocall 476
Phenol 351
Phesin 477
Phosphot 389
Philadelphia College of Pharmacy. (81) (89)
Physics of smell..... 478
Physostigma venenosum Balf..... 429
Phyto-Bezoar, an unusual..... 66
Phytochemical investigations..... 422
Pilulae Argenti colloidalis..... 395
Plant mucilages..... 11
— — substances, kep to principal..... 9
Platinum, production of..... (29)
Pluchera lanceolata O. A. H..... 430
Podophyllum, resin of..... 199
Poisoning by Epilobium hirsutum..... 431
Polygalaceae 103
Polygala alba or P. Boykinii..... 45
— — calcarea F. Schultz..... 104
— — Baldwinii Nutt.....45-103
— — javana D. C..... 104
— — paucifolia 177
— — Senega L..... 103
— — serpillacea Weihe..... 104
— — variabilis H. B. K. albiflora D. C. 104
— — vulgaris 101-104
Popular Scandinavian names of drugs and medicines 21-49-133
— — names of Brazilian drugs..... 384
Poristrophe bicalcyculata Nees..... 430
Position of the pharmacist..... 174
Powdered extracts of licorice, examination of..... 112
Preservation of protargol solutions..... 198
Precipitation of alkaloids, limits of, by Marmé's reagent..... 233
Prioria copaifera..... 116
Professional status of pharmacy..... 127
Proprietary preparations, advertisement of..... 172
Prosopis horrida Kunth..... 28
Proteolytic Enzyme from yeast juice, the detection of..... 144
Protoplasm and proteids..... 11
Pterocarpus erinaceus..... 428
— — marsupium Roxb.....242-427
— — orinaceus Poir..... 429
Pure food and drug laws.....7-43
Puya coarctata Gay..... 29
Pyroform 156
Pycnanthemum lanceolatum..... 414
— — linifolium 414
Pyrolaceae 104

Quinine nitroprussiate..... 191
— — price of..... 240
— — salts, some new..... 275
— — sulphate in America..... 341
Quisqualis Indica L..... 430

Page

Ranunculaceae 430
Rare metals, cost of..... (98)
Recent changes in pharmaceutical manufacturing 285
Red yeasts..... 114
Resins 11
Remedies, new 389-474
Resin (colophony) 15
— — of podophyllum..... 199
Retrospect 3
Rhizophoraceae 430
Rhizophora mucronata Lam..... 430
Rhodinol 109
— — esters of..... 194
Rhubarb 196
Rhubard and Senna, powdered..... 117
Rosaceae 102
Rourea santaloides W. A. A..... 429
Rubiaceae 430
Rutaceæ 429

Saffron, note on..... 347
— — 258
Saliphen 476
Saltpeter-crystals in extractum Cardui Benedicti 383
Salycyl-p-phenetidine 476
San Francisco College of Physicians and Surgeons ..... (89)
Santonine, a new reaction for..... 193
Sarcocephalus esculentus Afzel..... 430
Sauvagesia erecta L..... 430
Scabiosa succisa..... 430
Scheele and the discovery of oxygen.. (46)
Schmidelia africana D. C..... 429
Schneider Fr. R. v. ..... (3)
Scieneific societies at Ithaca..... (11)
— — men, scant recognition of..... 3
— — societies ..... (17)
— — synonymy of our indigenous plants 431
Scrophularineae 430
Seal fat, liquid acids of..... 109
"Secret" preparations, advertisement of 172
— — preparation, definition of..... 174
Sedatin 476
Sekisanine 192
Senecio Tedlici O. A. H..... 430
Senega, criticism of a proposed method for the assay of..... 45
Senn, Dr., gift to the Newberry Library ..... (1)
Sensation of taste..... 478
Separation of the practice of pharmacy. 251
Separating funnel, new..... 143
Sesamum Indicum D. C..... 430
Seven-hundreth anniversary..... (43)
Sicyos angulatus L..... 430
Silver nitrate 352
Simarubeæ 429
Sloane, Sir Hans..... (84)
Smith's dispensatory 117
Society of Chemical Industry..... (61)
Sodium phospate solution..... 352
Soft soap.....15-17-267
Solanum Carolinense..... 425
Solidago odora Act..... 240
Solubility of the pentosans in the reagents employed in the estimation of starch 201
Solutio Argenti colloidalis..... 396
Sonchocarpus sericeus B. H..... 429
Spathodea campanulata..... 430
Specification sheet..... ..... (7)
Sphacranthus Indicus L..... 430
Spiraea lobata 177
Spiræ Ulmaria L.....102-177

Page

Spirit of Nitrous Ether, assay of..... 373
St. Louis College of Pharmacy..... (41)
Stachytarpheta Indica Vahl..... 430
Standards for white and black mustard seed 328
Starch in opium..... 195
— — dissolving power of taka-diastase. 355
Sterculia tragacantha..... 29
— — ureus Roxb..... 29
Stili resinosi 199
Strophanthin 274
Strophanthus hispidus D. C..... 430
— — Kombi 193
Strophanthin in the B. P. Tincture and Extract, a quick polarimetric method for the estimation of..... 393
— — and Strophanthidin 263
Suberin 11
Subtropical laboratory, abandonment of (1)
Superstitions regarding salt..... (4)
Swaim's panacea 179
Sweet Gum Oil..... 240
Swiss Apothecaries' Society..... (89)
Sylvane from beechtar creosote..... 110

Tannic Acid, the application of, for the isolation of alkaloids..... 421
Tannins 10
Tannon 156
Tartaric acid in presence of citric acid, the estimation of..... 423
Taste, sensation of..... 478
Taylor, Alfred B..... (25)
Thelotrema Rhamni Purshianæ S..... 425
Theobromine, testing the purity of..... 311
— — solubility of in solutions of trisodium phosphate..... 191
Thephrosia purpurea Pers..... 429
Therapeutic value of asenama..... (71)
Thermo-regulator, a new..... 334
Thespesia populnea Corr..... 429
Third International Congress of Applied Chemistry ..... (43)
Thuja occidentalis..... 309
Thymus virginicus L..... 414
Thyroglandin 393
Thyroidin, preparation of..... 157
Thyroid Gland, the iodine compounds of the 312
Tiliaceæ 429
Tinospora Bakis Miers..... 430
Toxine 288
Trademarks, registration of..... 128
Tragacanth 28
Trianthema monogyna L..... 429
Trimble, Henry.....(7), 409
Triphenin 476
Trommer's reagent 11

Page

Tropine betaine 339
— — choline 339
— — neurine 339
— — some derivatives of..... 339
Tyrotoxicon in cheese..... 338

Umbelliferae 429
Unguentum Credé..... 395
University education ..... (33)
University fellowships in pharmacy.... 256
— — pharmacy ..... (1)
— — reform in France..... (49)
— — of Michigan..... (57)
— — of Michigan, fellowship in chemistry 255
— — of Minnesota..... (49)
— — of Wisconsin..... (57)
Universities and colleges..... (17)
Urine, acidity of..... 268
— — analysis, a source of error in..... 336
— — test for albumen in..... 335
U. S. Patent laws..... (88)
Uvaria Chimæ Beauv..... 430

Vandellia diffusa L..... 430
Vanilla 118
Vanillin-para-phenetidine 478
Vegetable drugs, powdered, qualitative examination of..... 463
Veratrine 192
Veratrum viride Ait. and Veratrum album L. 150
— — album 150
— — viride 150
Verbenaceae 430
Vernonia cinerea Less..... 430
Viburnums, the comparative structure of the barks of certain American... 388
Vigna sinensis Endl..... 429
Violarieae 430
Volatile oils..... 11
Volatile oils, new..... 273
De Vrij, Johann Eliza.....369-(69)

Wangchi 241
War tax .....(87), 257-406
Waring, Colonel ..... (92)
Wash bottle, a small..... 142
Water blast, a new form of..... 417
Wells, David Ames..... (91)
Woodoil tree of China..... 196
Woolfat, on the chemical composition of 144
Wormwood, cultivation of..... (15)

Yass Leaves 240
Yeast Juice, proteolytic enzyme of..... 144

Zanthoxylon Senegalense D. C..... 429
Zehneria scorbiculata Hochst..... 430
Zinc chloriodide..... 9

Pharmaceutical Review.

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ANNOUNCEMENT.

During the past months the Review has had so much original matter that the monthly review was reduced to a few pages. Although such a condition is extremely gratifying to the editor, when viewed from the standpoint of original scientific matter published, it must be admitted on the other hand that the average reader does not want the monthly review crowded out by papers that naturally interest only comparatively few because of their extremely scientific nature. Inasmuch as more such scientific papers of a technical nature are either on hand at present or in prospect for the near future, it seemed highly desirable to somewhat change the policy of the Review in the future and to find another outlet for the scientific contributions.

There exists at present no pharmaceutical journal in the English language devoted exclusively to original scientific articles. Such a journal, if properly conducted and if it receives the necessary support could be made a credit to American scientific pharmacy. An experiment in issuing such a journal will be made during the present year. The editor hopes that pharmaceutical scientists will in one way or another encourage this new venture. Several pharmaceutical manufacturers have with their well known liberality consented to encourage the new journal financially by taking advertising space. Inasmuch as no direct financial return can be expected from such a journal, their contribution is largely made to pharmaceutical science and as such reflects credit upon the contributors. The first number of the

Pharmaceutical Archive, as the new supplementary journal is to be called, will appear about the middle of this month.

The space thus gained in the Pharmaceutical Review will be utilized partly for pharmaceutical articles of general interest and minor scientific articles that appeal more directly to the pharmaceutical practitioner. In large part it will be used to extend the monthly review, thus making the journal more true to its name than it has been during the past few months. In order to do justice to this subject it was deemed necessary to secure the assistance of several additional colaborers. As will be seen from the new list on the cover, the Review has been very fortunate in increasing the staff of its former well known contributors. Most of these men are not only well known in scientific circles as investigators and authors, but they are also unselfishly devoted to their respective sciences and to pharmacy in general. For their generous cooperation the Review takes this opportunity to publicly give expression to its obligations to them. The management will do all in its power to make the journal a credit to its contributors. The details of the programme will become apparent in the course of the year and will, therefore, not be discussed at the present time. Inasmuch as the abstracts of the present volume are to reflect the scientific progress made during the year 1898 it becomes apparent that this part of the work cannot be begun until the February number.

With this change in programme it was found necessary to make a change in the size of the page, particularly of the body of the journal. This change has also been suggested by friends of the Review for the sake of convenience on the part of the reader. With its modified programme and in its new form the Review comes to its old friends with the expectation of proving itself even more serviceable in the future than it has been in the past. It also hopes that those who are interested in pharmaceutical science will assist in making the Review a success. The Review is not conducted as an organ to advertise any particular institution, commercial or educational; neither does it represent any faction. The successful pharmaceutical manufacturer has learned to value scientific work and encourages it whenever he can. The pharmaceutical practitioner would also profit if possessed by the same spirit. One way to acquire this spirit, or to keep it alive when acquired, is to come in touch with modern scientific thought as presented in our better journals.

Retrospect.

A wellknown American writer on German topics has during the past year pointed to the fact that literary and scientific celebrities have received but scant public recognition in the Prussian, and since 1871 in the Imperial German capital. The few statues of Alexander v. Humboldt, Luther, Goethe, Schiller and others have been erected principally since the reestablishment of the empire, and the monuments erected to their memory are on the whole modest. On the other hand, the monuments that have been erected to Prussia's military heroes, are proportionately extravagant, and as a rule not even indicative of the relative importance of the true or quasi hero immortalized. It is true that Prussia is largely a military state and that its extravagances in this direction are possibly the logical outcome of its principal outward policy. It cannot be emphasized too strongly, however, that Prussia has not been simply a military state. At the beginning of this century it took the initiative in reforming not only military discipline, but educational and economical matters as well. Prussia furnishes to-day a large percentage of the German Universities, at the head of which the University at Berlin unquestionably stands.

Literary men may through their writings impress the public at large and thus erect within the memories and hearts of their countrymen monuments more lasting than those of marble and bronze. Scientists as a rule leave a more vague impression. Thus the names of Alexander v. Humboldt, Darwin and others may wellnigh become household words, but extremely little is as a rule known about that which has made them great.

But even these are fortunate mortals when compared with the pharmacist. How many persons, even among the liberally educated or even among scientific scholars know the names of the obscure apothecaries who discovered morphine and quinine. Yet the pains of hundreds of thousands, possibly millions have been alleviated by the one, and possibly even larger numbers have been saved from an early grave by the other. No Shakespeare has yet risen to immortalize the studious German apothecary to offset the wretched creature of Mantua who says "My poverty, but not my will, consents" in becoming partisan in a crime.

In Paris a movement is on foot to erect a monument to Pelletier and Caventou. Has one been erected in Germany in honor of Sertuerner? The late "Altmeister der Pharmacie" was buried last winter with not a handful of representative pharmacists in attendance, largely no doubt because he was not a University professor. His own profession seemed to have forgotten him and was awakened out of its lethargy only after it began to realize its negligence. Hager died a poor man dependent on personal friends. Is his career and fate typical of that of the pharmaceutical profession at large? Diligence, faithfulness in small things, are they to be rewarded by forgetfulness even before death?

Yet it is the faithfulness in small things that should be one of the marked characteristics of the pharmacist. It is the severe training of the old school apothecaries that brought out this quality and that produced no inconsiderable number of faithful servants of the public. At any time when the tendencies toward centralization of capital and specialization of effort were not as marked as at present these qualities counted for more than they do now.

The average pharmaceutical practitioner the world over has never stood very high in the social scale or in the economic or scientific world. Both the dignity of the ignorant divine and the bombast of many an average medical colleague have been well nigh foreign to him. He has rather acquired a popular and even a literary fame for certain eccentricities. The reason for this is that the pharmacist seldom is so fortunate as to acquire either marked professional distinction or an unusual amount of worldly gain. Unless he possesses the means to have most of his work done by competent assistants, he must devote himself personally to his business from morning until late at night so that little or no time is left for professional or scientific activity. Should he, however, be so fortunate as to acquire wealth, the position he thereby acquires is that of a successful business man largely irrespective of his profession. In this respect the wealthy secret nostrum manufacturer enjoys the same distinction with the worthier pharmaceutical and chemical manufacturer. In this country with its phenomenal development of the pharmaceutical industry it is the large manufacturer who possibly reflects most credit upon his profession not only in the eyes of the general public, but of the medical profession in particular.

Why should this be? There are two reasons. First of all the

pharmaceutical practitioner has largely surrendered his prerogative of manufacturer and dispenser of medicines. In part it is well that he should no longer attempt to do what the manufacturer can do better than he. In no small part he has preferred to give his attention to "side-lines" rather than to bother with the manufacture of certain preparations which he alone should make, which indeed the government should compel him to make because in this way alone can he be responsible for the product he is called upon to dispense. Moreover, where he was in position to purchase not only more economically but better than he himself could make he has failed to test the purchased article in order to guard against unintended error or willful adulteration.

He, however, is not alone to be blamed for this condition of affairs. Public opinion, which in this country not only dreaded but fought everything which politicians decried as paternalism or socialism, is in large measure responsible for the pharmaceutical evils of today. The condition that has resulted in consequence is not only serious, but often presents a decided aspect of the serio-comic.

On the other hand the pharmaceutical manufacturer has gained where the general practitioner has lost ground. He is without doubt the most conspicuous figure in American pharmacy at present. He has adapted himself to modern economic conditions and is rapidly learning to cooperate with modern science and engineering. So striking is this fact that no less an authority than Prof. v. Leyden called attention to it at the Vienna meeting of the Society of German Scientists and Physicians in a very striking manner by stating that the medical profession goes not to the pharmacopœia, but to the catalogue of the manufacturer for its materia medica. In the laboratories, especially of the German chemical manufacturers, hundreds of investigators are engaged in research and many more at the universities and in private practice not directly associated with the factories are either supplied with material for investigation or are aided financially in their investigations. The fact that a certain mercenary motive lies back of all this makes it no less significant. Though the pharmaceutical practitioner seems to have come almost to a standstill in his evolution, the manufacturer is ever conquering new fields. It is unmistakably true, that the manufacturer like other mortals sometimes makes mistakes, that he does things deemed unethical or even legally wrong, but he is equally unmistakably the most pro-

gressive element of modern pharmacy. He who is unwilling to admit this is either ignorant of the facts or unable to interpret them.

With the manufacturer on one hand and the dispensing physician on the other what is to be the fate of the general practitioner?

He will no doubt continue to exist where his services are demanded the same as the general practitioner in medicine and law. In large part, however, he will have to surrender. This may seem hard, but the cold fact might as well be faced. Pharmacists have fought hard against this fate and are still fighting hard, but apparently with little avail. All sorts of schemes have been tried and the American Pharmaceutical Association, our national stronghold of pet artificial schemes, last August turned straight against its former policy, thus surprising itself as well as others.

Druggists as well as others have blindly fought the department stores and in their excitement have overlooked the fact that 99 p. c. of their own shops were department stores on a small scale. Had some of the bills that were introduced into legislatures during the past year or two become operative law more drug stores than department stores would have been closed.

If the practice of pharmacy is a fossilized institution so that it cannot adapt itself to modern economic conditions, it is doomed. The constellations of the economic heavens under which we live at present are concentration of capital and specialization of effort. The pharmacist seems to have been very backward in recognizing this. It is true, a few imperfect attempts in this direction have been made. Some of the financially most successful retail druggists of to-day are those who have experimented in this direction.

A plan of pharmaceutical co-operation which is being tried at present and which is attracting attention the world over is represented by the various pharmacal companies. It still seems too early to venture any definite statement with regard to them as a class. Like many other institutions of a semi-socialistic nature, however, they appear to suffersome what from the fact that they are too many-headed. At the beginning of the last year one of them was reported to have practically changed its entire set of officers. This certainly smacks of ward politics and one need not be surprised to see companies fail that are controlled by such a spirit.

An account of the organization of beet sugar factories in Germany, in the Consular Reports for November last, is interesting as giving

an example of the successful application of the co-operative principle and may be quoted here. Out of 399 factories now in operation, nearly half are stock companies in which the majority of the shareholders are beet-growers. These include not only most of the largest factories, but also the most prosperous.

Another experiment of a totally different nature is also at present watched with a great deal of interest by thinking persons. It is the Merck Pharmacy which was opened early last year. Much ado has been made in certain quarters against this undertaking. Yet as an object lesson to pharmacy it is worth more than a hundred, yea than a thousand ordinary drug-stores. What we need is a Merck Pharmacy, i. e., a pharmacy conducted after the New York model, in every state, in every large city. Nothing would aid so much in elevating the position of the pharmaceutical practitioner in the eyes of the medical profession and of the people at large.

A matter of no little interest to the pharmacist as well as to the general public is the pure food and drug law wave which is sweeping across the country. It may seem rather strange and like a school boy experiment in legislation that a single state should have several sets of laws regulating the practice of one calling. Yet to those who are familiar with the *raison d'être* of these several laws the anomaly seems quite natural though possibly not a credit to the legislative genius of the people of the United States. The reason would seem to lie in the fact that pharmacists were willing to protect the public against willful adulteration on the part of unscrupulous colleagues, but were not willing to protect the sick against unintentional deficiencies in drugs and medicines made possible by ignorance and incompetency. It is mainly for this reason that we to-day witness two sets of laws regulating pharmacy and two sets of officials more or less enforcing these laws. Had the pharmacists taken a bolder position against incompetency as well as against dishonesty this state of affairs would probably not exist to-day. The excitement which scarcely abated early last year threatened once more to become intense toward the close. One thing, however, seems to be certain in spite of numerous errors, made possibly on all sides, viz. that a better protection of an innocent and mostly ignorant public is more and more finding favor.

While these experiments are going on in the various states, furnishing interesting and exciting reading matter for the dailies,

theoretical legislation is furnishing food for the Section on Legislation of the American Pharmaceutical Association, and incidentally for the state associations and the pharmaceutical press. Whether the anticipated model pharmacy law will ever result from the work undertaken by the Section on Legislation remains to be seen. Thus far the work has hardly outgrown the statistical stage. One thing seems certain that a model pharmacy law and the average pharmacy law of to-day must be quite distinct.

The burning questions during the past year have been of a commercial and legislative character. Pharmaceutical science takes its course largely irrespective of the general professional state of affairs. Specialization has made itself felt here to the detriment of the pharmaceutical practitioner. However much we may deplore this, it is certainly an advantage to pharmaceutical science that it is no longer directly dependent upon the pharmaceutical practitioner. One outcome of this condition seems to be that the general practitioner seems to be more willing than in the past to leave educational matters to those professionally engaged in education. At least it is certain that during the past year matters educational have been permitted to take their natural course without being disturbed by associations or the press. This by no means implies that pharmaceutical education has become stagnant either in the university or the college. A degree of activity in research has manifested itself during the past year that certainly redounds to the credit of our profession. Pharmacy is judged, not so much by the number of of mediocre graduates that are "let loose" annually, but by the best work of its most advanced scholars.

While reviewing with the mind's eye the scientific accomplishments of the past year, the reviewer also sees the names of those who no longer contribute to the progress of scientific pharmacy. Several university professors, whose names are inseparably associated with pharmaceutical science, have passed away, one of them in the prime of manhood and while engaged in research. The name of a model pharmaceutical practitioner, whose commercial position as well as scientific training, enabled him in a rare manner to combine scientific investigations with the practice of his profession, will also no longer appear in the scientific journals, except in references. Gloomy as such meditations are, we need not despair, for their spirit is rousing a younger generation to greater efforts. *E. K.*

A Key to Principal Plant Substances.

By *Rodney H. True.*

The following key is an attempt to arrange for ready use in the laboratory the simpler methods of identifying the commoner plant substances. The device that has proved of service in the identification of plants seemed to the compiler capable of adaptation to the present case, and an experimental trial of this key in laboratory practice during the past two years has seemed to confirm this thought. Standard works on microchemistry were used in the preparation of the following and no claim to originality in subject-matter is made.

The manner of use is so simple that explanation seems hardly necessary. Confirmatory reactions, referred to in the key by numbers in parenthesis accompanying the names of the substances, are appended and should be made use of.

One direction must be strictly observed. Each separate reaction demands a *fresh section* and a *clean* slide and cover glass.

Zinc chloriodide.

A.I Color red.
- B.I Cell contents.....Tannin. (1)
- B.II Cell walls.....Lignin.*

A.II Color brownish, cell contents.....{Protoplasm and Proteids. (2)

A.III Color blue.
- B.I Amorphous mass.....Plant mucilage. (3)
- B.II Granular cell contents.....Starch.

A.IV Color violet.
- B.I Cell walls.....Cellulose.
- B.II Cell contents.....Tannin. (1)

A.V Color yellow.

Phloroglucin and HCl.
- B.I Rose-colored walls.....Lignin.
- B.II Uncolored.

* See for confirmation, test with phloroglucin and HCl.

C.I Unswelled cell walls.....Suberin. (4)
C.II Swelled cell walls or amorphous.
D.I With iodine and H_2SO_4, blue.....Plant mucilage (3).
D.II With iodine and H_2SO_4, yellowish or brownish.....{Proteids and Protoplasm. (2)
A.VI No color reaction.
Trommer's reagent. (10)
B.I Orange-brown precipitate formed (Cu_2O).....Dextrose.
B.II Deep violet color, no precipitate.....Cane sugar.
B.III No visible reaction.
Tincture of alkanet.
C.I Red cell contents.....Resins. (5)
C.II No visible reaction.
D.I Crystalline bodies.
E.I Crystalline masses, rounded.....Inulin
E.II Crystals distinct, not rounded.
F.I Dissolves in HCl without effervescence.
Treat with dilute neutral $AgNO_3$.
G.I Assumes yellow color.....{Calcium phosphate. (6)
G.II Does not assume yellow color...{Calcium oxalate.
F.II Dissolves in HCl with effervescence,{Calcium carbonate.
F.III Dissolves in HCl little or none. (Seldom present in plants.).....{Calcium sulphate.
D.II No crystalline bodies.
E.I Soluble in cold absolute alcohol, ropy masses.....Volatile oils. (7)
E.II Insoluble in cold absolute alcohol.
F.I Soluble in ether, spherical masses.....Fatty oils. (8)
F.II Insoluble in ether.
G.I Incinerating without ash.....Gums. (9)
G.II Incinerated, leaves ashy skeleton.....Silica. (Treat with HCl to remove Ca salts.)

Confirmatory Reactions.

(1) *Tannins.*

In sections not wetted either with water or alcohol, when placed in ferric sulphate, tannins take on a deep blue or deep green color.

(2) *Protoplasm and Proteids.*

In Millon's reagent, a rosy-red color appears after a time, especially after warming.

[Millon's reagent is mercury dissolved in its own weight of conc. nitric acid, the solution then diluted with an equal volume of distilled water. Reagent to be used when fresh.]

(3) *Plant mucilages.*

Usually swell in water. Iodine and H_2SO_4 give either a blue or a violet-brown color.

(4) *Suberin.*

Insoluble in conc. H_2SO_4. In boiling KOH, ochre-yellow, granular masses are exuded. Stains blue in aniline violet, especially plainly when color is drawn from non-lignified tissues by use of acidulated alcohol.

(5) *Resins.*

In sections mounted in water and not previously exposed to alcohol or glycerin, after several day's treatment with copper acetate an emerald-green color appears. Hanstein's aniline violet stains resins blue.

(6) *Calcium phosphate and oxalate.*

Test does not exclude salts of other bases, but these rarely occur in plants.

(7) *Volatile oils.*

In sections not previously treated with alcohol or glycerin, these stain red in alkanet tincture. Distinguished from resins by copper acetate reaction (see 5 above).

(8) *Fatty oils.*

Treat section with conc. sulphuric acid and oil drops collect, becoming larger and more conspicuous.

(9) *Gums.*

Usually swell in water. Not colored blue by iodine and sulphuric acid.

[(10) *Trommer's reagent.*

A moderately thick section is placed for from two to ten minutes in a conc. solution of copper sulphate. Surface then quickly rinsed off with distilled water; section then transferred to a boiling mixture of equal parts by weight of water and KOH.]

Antipyrine and Spirit of Nitrous Ether.

By *Chas. Caspari Jr.*

The question whether the formation of a green color can be avoided when antipyrine and spirit of nitrous ether are dispensed together in mixtures has no doubt frequently presented itself to the minds of pharmacists without a satisfactory solution. The green color, as is well known, is due to the formation of isonitrosoantipyrine, $C_{11}H_{11}(NO)N_2O$, caused by reaction between nitrous acid and antipyrine and can only occur when free nitrous acid is present. Normal nitrites do not react with antipyrine and a green color is not produced in such mixtures until an acid (a trace of acetic or sulphuric acid will suffice) has been added, thus proving, that whenever the addition of spirit of nitrous ether to a solution of antipyrine causes a green color, free nitrous acid must be present in the former.

Ethyl nitrite, to which spirit of nitrous ether solely owes its medicinal value, is very easily decomposed and more particularly in the presence of water, forming alcohol and liberating nitrous acid, thus $C_2H_5ONO+H_2O=C_2H_5OH+HONO$. Commercial spirit of nitrous ether is almost invariably of acid reaction and even if carefully neutralized soon becomes acid again in aqueous solution and in the presence of antipyrine the green color is sure to appear sooner or later, depending upon the character of the spirit. In the presence of an excess of alkali or alkali carbonate in the mixture of antipyrine solution and spirit of nitrous ether, green isonitrosoantipyrine is not formed, as the liberation of nitrous acid is prevented, the ethyl nitrite being gradually decomposed with formation of alkali nitrite and ethyl alcohol. If physicians desire to prescribe antipyrine and spirit of nitrous ether in the same mixture they should, in order to avoid the undesirable green color, also add potassium or sodium bicarbonate; the claim that the latter will decompose the ethyl nitrite can be met by the statement that decomposition will occur anyhow by the action of water alone, with the liberation of acid, a far less desirable condition.

Antipyrine is not decomposed by alkali bicarbonates as was shown in the following experiments: To two aqueous solutions of antipyrine were added sodium and potassium bicarbonate respectively and after some hours the solutions were evaporated to dryness on a water-

bath. The white saline residues were treated with chloroform for the purpose of extracting the antipyrine and the chloroformic solutions evaporated to dryness; the residues possessed all the properties of antipyrine and when dissolved in water at once yielded a green color upon addition of commercial spirit of nitrous ether.

In April last a correspondent of the "Chemist and Druggist" o London commented on a prescription received by him calling for

Antipyrine	15 grains.
Wine of Antimony	1 fldrachm.
Spirit of Nitrous Ether	2 fldrachms.
Syrup of Tolu	3 fldrachms.
Solution of Ammonium Acetate	3 fldrachms.
Chloroform Water, sufficient to make	3 fldrachms.

remarking, that after various attempts to avoid the formation of green color, he had observed that when the antipyrine was dissolved in the chloroform water and then added last to the other ingredients no green color was developed. The prescription and remarks were copied by several pharmaceutical journals in this country and pharmacists may have been misled by the suggestion offered by the British correspondent into the belief that chloroform actually prevents the formation of isonitrosoantipyrine. To show that chloroform does not prevent the reaction, the writer made a large number of experiments last summer and begs to submit the two following as conclusive: When antipyrine is dissolved in pure chloroform or chloroform water and spirit of nitrous ether of slightly acid reaction is added to either solution, a green color is at once produced; if the spirit of nitrous ether be previously carefully neutralized, the development of the green color in both solutions occurs only after a time; if an excess of potassium bicarbonate be dissolved in the chloroform-water solution, no green color whatever is produced even after standing for several days. The conclusion arrived at in the above case points to the fact that in all probability the correspondent of the C. & D. used a solution of ammonium acetate which was decidedly alkaline in his final experiment; when such an alkaline solution of ammonium acetate was used by the writer in compounding the above prescription, no trace of green color was discernable, no matter in what order the ingredients were added, the spirit of nitrous ether however in each case being added last or at least mixed with the ammonium acetate solution before the addition of the antipyrine.

Spirit of nitrous ether is gradually losing favor with the medical profession and is at best an unsatisfactory preparation on account of its decided instability. It could well be dropped from the Pharmacopœia, the official requirements being rarely met with in the supply furnished by pharmacists, and the ordinary commercial article, often sold in bulk out of carboys, is of very questionable value, at times containing less than one-half percent of ethereal nitrite.

Baltimore, Md.

Laboratory Notes.

By *Ferd. A. Sieker.*

I. Glycerin.

The U. S. P. of 1880 demanded that "a portion of 2 or 3 grms., gently warmed with an equal volume of sulfuric acid in a test tube, should not become dark colored (absence of cane sugar)."

The U. S. P. of 1890 demands that "on gently warming a mixture of equal volumes of glycerin and of concentrated sulfuric acid in a test tube the liquid should not acquire a dark color (absence of readily carbonizable impurities)."

The demands of the U. S. P. of 1890 have caused confusion in the minds of some of the inexperienced.

It is not always clearly understood what is meant by "on gently warming" nor does the U. S. P. of 1890 state how much by volume of the two liquids is to be mixed.

Warming is regarded as heating moderately or to about 40° C. The U. S. P. of 1890 (page XLIII) states that by a gentle heat is meant any temperature between 32 and 38° C.

On mixing about 1 cc. or less of each pure glycerin and sulfuric acid the temperature will not rise high, because the heat is absorbed by the container and therefore the application of a moderate heat (immersion in warm water) may be permissible. The writer has observed that on mixing about 5 cc. of each sulfuric acid and pure glycerin (20° C.) the temperature rose to about 75° C. and on mixing about 7 cc. of each the temperature rose to about 90° C. The color

of the mixtures was yellowish, but not dark colored. On mixing 5 cc. or more of each, considerably more than a gentle heat is developed and the application of more heat is therefore undesirable.

II. Resin (Colophony).

The U. S. P. describes resin as "the residue left after distilling off the volatile oil from turpentine" (a concrete resin obtained from *Pinus palustris* and other species of *Pinus*). It further describes it as "a transparent amber-colored substance" etc. "Specific gravity 1.070 to 1.080."

This brief description answers all ordinary purposes, because resin is evidently not subject to adulteration. It is, however, sometimes necessary to detect resin in other substances and a study of its chemical and physical properties is therefore of value.

E. Dieterich (Helfenberger Annalen 1892, p. 16) found the specific gravity to vary from 1.076 to 1.079, the acid number from 162.4 to 175.47 and the iodin number from 146.55 to 180.15 (examination of 8 samples). He regards the iodin number as valueless in determining its quality because of the great variations.

In 1895 he reported a variation in the sp. gr. of from 1.071 to 1.083 and in the acid number of from 154.0 to 172.2.

One sample of resin was recently examined by the writer. The sp. gr. was not determined. The acid number was found to be 171.2 (titration of cold alcoholic solution with alcoholic $\frac{N}{2}$ KOH and phenolphtalein as indicator). The iodin number was 165.9 and 166.7 (16 hours contact with iodin and mercuric chlorid solution). As resin absorbs iodin very rapidly, one hour's exposure is perhaps all that is necessary.

III. Soft Soap.

Green or soft soap is recognized by both the U. S. and German pharmacopœias. The two formulas are identical. Linseed oil is directed to be used with 20.25 p. c. of its weight of absolute potassium hydroxid and 10 p. c. of its weight of alcohol. Neither formula prescribes a definite yield, but assuming that there is no loss by evaporation, the finished product will represent 40.8 p. c. of oil or about 36.7 p. c. of fatty acid. The German pharmacopœia directs heating on a water bath until saponification is complete, and the U. S. P. directs heating to 60° C. The German pharmacopœia describes it as a yellowish-brown, transparent, soft, unctuous mass

of faint soap-like odor and soluble in water and alcohol. It permits only a limited amount (about ¼ of 1 p. c.) caustic alkali, thus: 10 gm. of soap dissolved in 30 cc. of alcohol and 0.5 cc. $\frac{N}{1}$ HCl added should remain clear and should not be colored red by phenolphtalein. The German Pharmacopœia does not state if the phenolphtalein is to be added to the hot or the cold solution. On heating an alcoholic solution of soap, dissociation ensues and therefore a cold neutral solution will appear alkaline when heated. The U. S. P. describes soft soap as "a soft unctuous mass of yellowish-brown or brownish-yellow color, soluble in 5 parts of hot water to a nearly clear liquid and in 2 parts of hot alcohol without leaving more than 3 p. c. of insoluble residue." It does not state that it should be transparent, nor does it prescribe a limit for the percent of free alkali, although it does prescribe a definite quantity to be used in its preparation.

Examination of Commercial Samples.—Two samples were examined.

I. The first was a soap of German manufacture and of satisfactory quality. It was a transparent, yellowish-brown, unctuous mass of soap-like odor and perfectly soluble in distilled water, and left a small residue on treatment with alcohol. At 15 to 20° C. it very slowly assumed the shape of the container in which it was kept, but at about 30° C. it readily assumed the shape of the container. At a temperature of 5 to 10° C. it lost its transparency, but regained it on warming. After subjecting it to the heat of a water bath for some time, it lost its transparency and became thinner, so that it would flow at the ordinary temperature. On incorporating just enough distilled water to make up the loss in weight, it resumed its transparency, firmer consistency and shortness (not stringy).

This proves that a soap that is soft may contain less water than one of firmer consistency. Boiling the soap over a gas flame, and making up the loss in weight with water, did not change its solubility or transparency, which shows that it is quite stable.

The percent of insoluble fatty acid was determined by dissolving the soap in water, adding diluted sulfuric acid and a known weight of purified yellow wax, warming, washing, drying and weighing. The weight minus the weight of wax used gave the yield of fatty acids. The excess of alkali was determined by dissolving the soap in alcohol, adding a few cc. of $\frac{N}{1}$ HCl, boiling to expell CO_2, and titrating the

cold solution with $\frac{N}{1}$ KOH, using phenolphtalein as indicator. The number of cc. of $\frac{N}{1}$ HCl, neutralized by the excess of alkali, gave by calculation the percent of excessive alkali (regarded as KOH) present in the soap.

The percent of glycerin was determined by using the filtered mother liquor and washings obtained in determining the percent of fatty acids. A definite part of this was rendered strongly alkaline with KOH, sufficient $K_2Mn_2O_8$ was added and the mixture was heated to boiling. Sufficient sulfurous acid was added, the mixture filtered and the filtrate and washings acidulated with acetic acid and the oxalic acid precipitated as calcium oxalate. The washed calcium oxalate was dissolved in sulfuric acid and titrated with $\frac{N}{10}$ $K_2Mn_2O_8$ and the percent of glycerin obtained by computation.

The chlorin was determined by using the mother liquor, from which the fatty acids were separated and precipitating with silver nitrate in the usual manner.

The sulfuric acid was determined by separating the fatty acids by means of hydrochloric acids and treating the mother liquor and washings with $BaCl_2$ and finishing in the usual manner.

Results of Analysis of Sample I.

Fatty acids including resin, insoluble in water	41.5 and 41.8 p. c. (2 estimations).
Excess of alkali regarded as KOH	0.25 p. c.
Hydrochloric acid (present as alkali chlorid)	0.673 p. c.
Sulfuric acid H_2SO_4 (present as alkali sulfate)	2.46 p. c.
Glycerin	3.97 p. c.
Alcohol	none.

The soap was also examined for sugars and potassium silicate, but with negative results. Sodium was present in appreciable quantity, but the percent was not estimated. The sodium might have been introduced as an impurity in the potassium hydroxid employed in preparing the soap, or it might have been added intentionally so as to impart a firmer consistency.

The presence of chlorides and sulfates in a soap that is satisfactory certainly proves that the use of pure potassium hydroxid as

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[1] Benedikt, Analyse der Fette und Wachsarten, p. 88.

directed by the U. S. P. is unnecessary. The U. S. P., however, permits 3 p. c. of matter insoluble in alcohol and thus sanctions the use of a caustic potash that does not entirely conform to the official requirements.

Perhaps some of the sulfuric acid was introduced by neutralizing the excess of alkali that was employed in the process of saponification.

Alcohol was not present and it is not probable that large manufacturers of soft soap consider it as a necessary addition. Its only purpose would be to facilitate saponification and it would be largely if not entirely volatilized during the process of heating.

The fatty acid separated from the soap was a clear yellowish-brown liquid at about 25° C., but on long standing below this temperature a white crystalline deposit formed. It could be rapidly cooled to about 15° C. without becoming turbid. The specific gravity was 0.9412 at 16° C. and 0.927 at 25° C., while the sp. gr. of acids from American linseed oil from soap prepared by the writer was found to be 0.913 at 15° C. The iodin[2] number of acid from the German soap was found to be 167.44 (24 hours contact with a solution of iodin and mercuric chlorid).

The iodin number of linseed oil, as reported by different investigators, varies considerably. Thus E. Diederich[3] reports the iodin number to be about 181 (24 hours contact), while Hübl found it to be only 158.[4] The iodin number of the acid from linseed oil is somewhat higher than that of the oil. The acid number of acids from the soft soap was found to be 185.03, while Allen states that the acid number of acids from linseed oil is 189 to 195.2. It appeared that this was not a pure linseed oil soap, for while the specific gravity was too high, the acid number was too low. The iodin number may also be regarded as too low, although it was too high for the presence of other available oils. The high sp. gr. suggested the presence of resin[5] which was substantiated by the application of Gottlieb's[6] test. According to Gladding's[5] quantitative method, the amount was found to be about 15.6 p. c. of the weight of crude fatty

[2] For application of test see Pharm. Review 1897, p. 112.
[3] Helfenberger Annalen 1895, p. 62.
[4] It must be considered in this connection that the linseed oil and its acids are subject to oxidation, which will decrease the iodin figure. Again, the methods employed by different chemists vary, especially the length of time the oil is left in contact with the iodin-mercuric solution.
[5] For properties of resin see p. 15.
[6] Benedikt, Anal. der Fette und Wachsarten. pp. 121 and 124.

acid obtained from the soap, which is equivalent to less than 6 p. c. of resin in the soap.[7]

The presence of glycerin in the soap indicates that it was prepared by direct saponification with potassium hydroxid, because when superheated steam is employed to decompose the oil, the glycerin is generally separated. According to Benedikt, linseed oil contains about 9.950 p. c. of glycerin. The percentage of glycerin found is a little higher than would be expected from the percentage of fatty acid contained in the soap. This might have been caused by the presence of other organic substances that yield oxalic acid on oxidation, in the mother liquor that was used in making the determination, but this subject was not further investigated. The object of the resin is, perhaps, to impart transparency to the soap. At any rate a 40 p. c. resin potasium soap prepared by the writer was very transparent and the addition of 1 part of this resin soap to about 5 parts of linseed oil soft soap increased the transparency of the latter. The subject was not further investigated.

II. The second sample of soap was obtained from an American manufacturer who claimed that it was prepared from cotton seed oil. It possessed a much lighter color than the first sample. It was transparent and soluble in water and also left a little insoluble matter on treatment with alcohol. The consistency was too firm at the ordinary temperature. On heating on a water bath it became soft but hardened again on cooling. Its consistency and physical properties differed somewhat from the first sample.

Result of Analysis of Sample II.

Fatty acids insoluble in water..... 48.7 p. c.

Excessive alkali (regarded as KOH, but almost entirely present as carbonate).....1.16 and 1.14 p. c.
(2 estimations.)

Alcohol.....if any not determined.

The fatty acid after warm filtration and cooling represented a dirty yellow solid, which melted at 34 to 35° and congealed at 31 to 32° C. (uncorrected). The high melting and congealing point coroborate that it was a cotton seed oil soap as claimed by the manufacturer. The acid number was found to be 200.6 which conforms closely to that of cotton seed oil. The iodin number was

[7] A correction was made for resin contained in the ether that was employed in carrying out Gladding's method. Ether generally contains traces of resin, derived from the cans in which it is kept.

found to be I. 88.9, II. 89.4 and III. 89.21 (3 estimations) which is too low for acids from cotton seed oil (about 110). This was not further investigated. A small quantity of the soap was warmed on a water bath and diluted with distilled water so that the product represented about 40 p. c. of fatty acid, when a soap of suitable consistency resulted.

In the report of a committee of the American Pharmaceutical Association[8] an olive oil soft soap is recommended. The formula presented directs 360 Gms. of potassa, U. S. P. to be used for 1000 cc. (or about 920 Gms.) of olive oil. Alcohol is not mentioned. The formula directs the soap to be evaporated to the proper consistency, but no definite yield is prescribed. According to the writer's experience olive oil forms a good soft soap, but the amount of alkali recommended in the formula referred to above is excessive. Olive oil does not require more alkali than does linseed oil for saponification. The saponification number of olive oil is about 192 while that of linseed oil is from 190 to 195. In the writers experience 40 parts by weight of olive oil will make about 100 parts by weight of soft soap of the proper consistency.

An improvement in the manufacture of soft soap was recently patented by E. G. Scott.[9]

"The improvement consists in separating the oil or oils into glycerin and fatty acids by means of superheated steam or otherwise, recovering the glycerin and saponifying the fatty acids".

In this manner it is evidently possible to prepare a soft soap without the use of an excess of alkali.

A good soft soap should be perfectly soluble in water and should not contain more than about 3 p. c. of matter insoluble in alcohol (carbonates, sulfates, silica, etc.). It should not contain unsaponified fat, but should contain about one-fourth of one per cent of free alkali. It should be transparent and possess the proper consistency. It should not be stringy. It should contain about 40 p. c. of fatty acids insoluble in water, and should be free from alkali silicates, starch and other adulterants. As soft soap loses moisture on exposure, which changes its physical properties, it should be stored in well closed containers and in a comparatively cool place.

Laboratory of Lehn and Fink, New York.

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[8] Proceedings 1895, p. 241.
[9] The Journ. of the Society of Chem. Industry 1897, p. 811. Eng. Pat. 26,285.

Popular Scandinavian Names of Drugs and Medicines.*

By *Harold Bruun.*

Olje, Sennep,	Oil of mustard.
" Sesame,	Benne oil.
" Sevenbom,	Oil of savin.
" Sten,	Rock oil.
" Timian,	Oil of thyme.
" Vintung,	Heavy oil of wine.
" Vitriol,	Sulphuric acid.
Opiumsdraaber,	Tincture of opium.
Oplösning,	Solution.
" Donovans,	Donovan's solution.
" Monsel,	Monsel's solution.
Opodeldoc,	*Linimentum opodeldoc.*
" flydende,	*Linimentum saponato camphoratum.*
Ormefrö,	American wormseed.
Ormekager,	Worm cakes.
Oxalsyre,	Oxalic acid.
Oxalsurt Cerium,	Cerium oxalate.
Oxegalde, renset,	Oxgall, pure.
Öienvand,	Eye water.
Parakerse,	Para cress.
Pariserblaat,	Iron cyanide.
Pebermynte,	Peppermint herb.
" olje,	Oil of peppermint.
" vand,	Peppermint water.
Peberrod,	Horse radish.
Peber, spansk,	Red pepper.
" röd,	Red pepper.
" sort,	Black pepper.
" " fine,	Black pepper, powdered.
Persillefrö, Petersille,	Parsley seed.
" olje,	Oil of parsley.
" vand,	Parsley water.
Perikum,	St. John's wort.

* Copyrighted. Continued from Vol. 15, p. 239.

Persisk Betramblomster,	Insect powder.
Phosphorsurt Jernoxydul,	Iron phosphate.
Phosphorsurt Kali,	Potassium phosphate.
Phosphorsurt Kalk, precipiteret,	Precipitated calcium phosphate.
Phosphorsurt Natron,	Sodium phosphate.
" Zink,	Zinc phosphate.
Pichurimbönner,	Pichurim bean.
Pigaebleblade,	Thornapple.
Pikrinsyre,	Picric acid.
Piletraebark,	Willow tree bark.
Piller, Blancardi,	Pills of iodide of iron.
Pionkjerner,	Peony seed.
Plaster, Bly,	Lead plaster.
" Spanskflue,	Cerate of cantharides.
Pokkenholt,	Guaiac wood.
Potaske,	Potassium carbonate, crude.
Potaske, renset,	Potassium carbonate, pure.
Praeparet Traekul,	Charcoal.
Pommerantsskaller, bitre,	Bitter orange peel.
" " söde,	Sweet orange peel.
" sirup,	Syrup of orange.
" tinctur,	Tincture of orange.
Phenylsyre,	Carbolic acid.
" vand,	Solution of carbolic acid, 3%.
Pulveriseret Jern,	Powdered iron.
Pulver, aromatisk,	Aromatic powder.
" Bruse,	Effervescent powder.
" afförende,	Compound licorice powder.
Pungeurt,	Shepherd's purse.
Purrelög,	House leek.
Qvassiaved,	Quassia chips.
Qvaede, bengalsk,	Bael fruit.
Qvaedekjerner,	Quince seed.
Qviksölvoxyd, rödt,	Red oxide of mercury.
" " svovlsurt,	Sulfate of mercury.
" med kridt,	Mercury with chalk.
" piller,	Mercurial pills.
" praecipitat, hvid,	Ammoniated mercury.
" " rod,	Red oxide of mercury.

Qviksölvsalve, graa,	Mercurial ointment.
" sublimat,	Corrosive sublimate.
" tvechlor,	" "
" tvejod,	Red iodide of mercury.
Raa Terpentinolje,	Crude turpentine oil.
Raevekage,	Nux vomica.
" extract,	Extract of nux vomica.
" tinctur,	Tincture of nux vomica.
Rapfrö,	Rape seed.
Ratanierod,	Krameria.
Ravolje,	Oil of amber.
Ravesyre,	Succinic acid.
Reinfan blomster,	Tansy.
Reinfanolje,	Oil of tansy.
Renset Honning,	Pure honey.
" Kviksölv,	Purified mercury.
" Potaske,	Carbonate of potassium, pure.
" Ravolje,	Oil of amber, pure.
" Svovlblomme,	Sublimed sulphur.
" Terpentinolje,	Oil of turpentine, pure.
" Vinsten,	Cream of tartar.
Reseda,	Mignonette.
Rhabarber, ostindisk,	East Indian rhubarb.
" tyrkisk,	Turkish rhubarb.
" draaber,	Tincture of rhubarb.
" " bitter,	" " " bitter.
" "	*Infus rhei alkali Ph. N.*
" extract,	Extract of rhubarb.
" sirup,	Syrup of rhubarb.
Rod, Alant,	Elecampane.
" Alun,	Alun root.
" Angelika,	Angelica root.
" Baldrian,	Valerian root.
" Bertram,	Feverfew.
" Bomuldbark,	Cottonroot bark.
" Bark, Granat,	Pomegranate root bark.
" Bregne,	Male fern.
" Braek,	Ipecac root.
" " amerikansk,	" spurge.

Rod, Burre,	Burdock.
" Gentian,	Gentian root.
" Gurgemeie,	Turmeric.
" Hundetunge,	Hounds toung.
" Kainka,	Cahinca root.
" Kalmus,	Sweet flag.
" Kolumbo,	Columbo root.
" Lakrits,	Licorice root.
" Lövetand,	Dandelion.

(To be continued.)

Hibiscus Esculentus.

Under the title of "A neglected source of mucilage" the August number of the National Druggist contained a brief article on the okra or *Hibiscus esculentus*, which was abstracted for the November number of the Review. Dr. B. F. G. Egeling of Chihuahua, Mexico, calls attention to the fact that this source of a mucilaginous drug has not been neglected by those who knew about it. In order to counteract any erroneous impression that may have been conveyed by the abstract the contents of Dr. Egeling's letter is herewith reproduced.

"On page 228 of the last volume of the Review, *Hibiscus esculentus* L. is mentioned as a neglected source of mucilage. I beg to state that for this reason the plant is officinal in the last (3d) edition of the Mexican Pharmacopœia. The manufacturers of the well-known French patent medicines *Pâte pectoral de Nafé d'Arabic* and *Sirop de Nafé d'Arabic* also claim that the fruits of *Hibiscus esculentus* form the most important ingredient of their preparations on account of their mucilaginous, pectoral properties — *Nafé d'Arabic* being the French name of the plant. — Okra is very commonly used as a diuretic in this country.

"Another Hibiscus species possesses medical virtues—it is *Hibiscus Sabdariffa* L. The flowers, as infusion form a very mucilaginous demulcent, and on account of their containing considerable tartaric acid, sweetened with sugar, an extremely pleasant drink. This drug is commonly kept for sale in Mexican drugstores. The coloring matter is said to resemble litmus."

Gums.

*J. F. Hanausek.**

The name gums is applied to all of those amorphous plant substances insoluble in alcohol and either dissolving or merely swelling in water, which originate either by degenerative changes of the cell wall (pathological gummosis) or are found at wounded places in woody plants (also in the heart wood) from cell contents and close the wounds by shutting the openings into the vessels (physiological gummosis) (1—6.) The kinds of gums appearing in commerce are in but a small part products of the metamorphosis of cell walls, as tragacanth, tuna and moringa gums. They have their origin chiefly in the constituents of the cell contents, as genuine gum arabic and in general most of the varieties of the acacia gums (7—11 and 22). The main constituents of gums, which are not chemical individuals but only mixtures, are arabin, a combination of arabic acid $C_{12}H_{22}O_{11}$ or $C_{98}H_{192}O_{74}$, with calcium, potassium or magnesium, bassorin (adragantin $C_{12}H_{20}O_{10}$ swelling in hot water) and cerasin (meta-arabic acid, obtained by heating arabin to 100—150° or by the action of concentrated sulfuric acid on the same substance) (21).

The different varieties of gums can be divided according to these substances (3, 12) into 1. gums containing arabic acid with much arabin and little metarabin and cerasin: Acacia gum, genuine East Indian gum. Acajou gum; 2. gums containing meta-arabic acid with meta-arabin and arabin; stone-fruit gums from the cherry and the plum: 3. gums containing bassorin, with bassorin and little arabin or some nearly related body: tragacanth, bassora, kutua, cocoa, chagual and moringa gums; 4. gums containing meta-arabic acid and bassorin: gum of *Cochlospermum gossipium*. Each kind, according to its properties, especially with reference to its solubility in water, its adhesive, stiffening or thickening qualities, finds use for technical purposes in many and different ways.

The most important kinds are described in the following.

I. Acacia gums. These are separated into East, West and South African, East Indian and Australian varieties.

The East African gum, the real gum arabic, comes principally from *Acacia Verek* Guillem. and Perott. (*Acacia Senegal* Willd.), *Acacia*

* Translated from Lueger's Lexicon der gesamten Technik for the Pharmaceutical Review by Prof. Rodney H. True.

fistula Schweinf. and *Acacia stenocarpa* Hochst. It is collected in Kordofan, Senaar, along the Blue Nile and its eastern tributaries, in Bischarin and in Somaliland, and forms round, knobbed, ovate, oblong and angular pieces from the size of a pea to that of a walnut. These are traversed by small fissures, and have various colors and are transparent in differing degrees. According to color, size and like quality otherwise, the various grades of gum are obtained by sorting. The gum is brittle, with conchoidal glassy fracture, easily powdered, odorless, with insipid, mucilaginous taste, dissolves completely in a double quantity of water, forming a powerfully adhesive mucilage, always having a somewhat yellow color and exhibiting an acid reaction. It is insoluble in alcohol and ether and when heated to 156° becomes in part insoluble from the formation of meta-arabic acid. Sp. gr. when air dry 1.487. The mucilaginous solution mixes with sugar of lead solution in all proportions without turbidity; it precipitates with iron chloride or borax as a jelly and by alcohol. When heated with nitric acid, the gum yields mucic acid in very varying proportions (14—18 p. c.). The differences in optical conduct are remarkable: Kordofan gum turns the plane of polarization to the left, Senaar gum to the right. (Concerning the appearance of the poorer sorts of East African gum see references 3, 4 and 15.)

West African gum, so-called Mogador gum, from Morocco, comes from *Acacia gummifera* Willd. It dissolves incompletely and is a poor substitute for genuine gum arabic. Senegal gum, which is much more important, appears in three chief varieties. a) *Gomme du bas du fleuve*, gum from the lower course of the Senegal River, the commonest sort, in round or thick, vermiform, yellowish and brownish pieces. b) *Gomme du haut du fleuve*, gum from the upper course of the Senegal River, cleaner, whiter, more readily soluble in water, in thin twig-like and vermiform pieces; especially abundant. c) *Gomme friable* (Salabreda), pieces colorless or very slightly colored, consisting of vermiform pieces and numerous very fragile fragments various in size and color. From these collected products, the commercial sorts are obtained in France by sorting and sifting (3 and 4). Genuine gum arabic is easily distinguished from Senegal gum in the poorer grades, but to separate Kordofan gum from the best Senegal gum is very difficult. According to Tschirch (12) "Senegal gum displays perhaps fewer fissures, is also less brittle and shining than Kordofan gum, but the appearance of all kinds of gum depends very

much on the weather. The pieces in Senegal gum reach 4 cm. in size, the Kordofan gum is never as large. In larger masses, where the two sorts are in general more readily distinguished, a somewhat reddish color is seen in the Senegal gum." Together with the use of gum arabic in medicine (in the deserts also as a food) it finds use in the arts as an excellent adhesive, in giving a fine finish to silk stuffs, silk ribbons and laces, as a thickening medium in the manufacture of liquors of the finest sorts, in the printing of goods, and in the preparation of water colors, in making match heads and as an ingredient of ink to give the writing a glossy appearance. Vegetable glue is a gum solution with two percent of aluminium sulphate.

South African acacia gum, known as Cape gum, from *Acacia horrida* Willd. (also *Acacia Karoo* Hayne. and *Acacia capensis* Burch.), is collected on the Orange River and consists of dark, turbid pieces incompletely soluble in water. Great Namaqua and Damara acacia gum from *Acacia giraffe* Willd. is said to be the better quality (13).

East Indian acacia gum from *Acacia Arabica* Willd. is known in commerce by the name *Amraa.*

Australian acacia gum, wattle gum, is a considerably used substitute for gum arabic. It is gathered in New South Wales and South Australia and comes from *Acacia pycnantha* Benth. It consists of stalactitic or hemispherical pieces reaching a length of 10 cm. with a flat side at the point of contact with the bark, reddish-brown, translucent, readily and completely soluble in water.

By bleaching the darker sorts with sulphurous acid, the attempt is made to give an appearance like that of the Kordofan gum. Adulteration of the powdered gum with dextrin is frequent. According to Hager, a powder sophisticated in this manner, in dilute aqueous solution with five or six drops of ammonium molybdate solution and mixed with a few drops of nitric acid and boiled, gives a blue fluid; the pure gum solution remains colorless or becomes faintly bluish-opalescent. Other substitutes used in the arts are agar-agar and carrageen.

Sometimes on very smooth paper the best gum adheres poorly; the addition of calcium nitrate increases the adhesive power (15). The so-called mineral gum of Way is aluminium phosphate dissolved in sulphuric or phosphoric acid.

II. Genuine East Indian gum, Feronia gum, from the East Indian member of the *Aurantiaceæ*, *Feronia elephantum* Corr. forms large, irregular, superficially tuberculate, transparent pieces of a topaz-

yellow color and extraordinary glossiness. These pieces dissolve readily and completely in water. It turns the plane of polarization to the right, and has an ash content of 5.1 percent. It can completely take the place of genuine gum arabic (16).

III. Mesquite gum, miguite, or musquit gum from *Prosopis dulcis* Schicde (*Acacia dulcis* Willd.) and *Prosopis horrida* Kunth., etc., from Mexico and the southern part of the United States.

IV. Brazilian gum of Para from *Acacia Angico* Mart.

V. Gum from *Hymenæa Courbaril*, grasshopper tree, *anime* tree, from South America.

VI. Ghati gum from *Anogeisus latifolia* Wallich of the East Indies.

VII. Acajou gum, Gomme d'Acajou, from *Anacardium occidentale* in the West Indies and South America. All these are substitutes for gum arabic and are mixed with it.

VIII. Of the gums containing meta-arabic acid, only cherry gum, *Gummi nostras, gomme de pays*, needs mention. It is found on the broken bark of cherry, plum, apricot and almond trees in hemispherical or kidney-shaped pieces of pale yellow or brown color. Cherry gum and apricot gum have a dark color. The last is unusually common in lower Austria. It dissolves in part in water to a reddish-brown, somewhat disagreeably smelling liquid, while a part remains gelatinous. It is used but little (in France) (4).

IX. The following kinds of gum contain bassorin. Tragacanth is formed by the metamorphosis of the membranes of the cells of the pith and medullary rays of *Astragalus* species and of dried slime. The most important plants furnishing gums are: *Astragalus adscendens* Boiss. and Hausk. in southwestern Persia, *Astragalus brachycalix* Fisch. in Kurdistan, *Astragalus gummifer* Labill. in Syria and Asia Minor, *Astragalus microcephalus* Willd. in Asia Minor and America, *Astragalus verus* Oliv. in Asia Minor and Persia, and still others. Only *Astragalus cylleneus* Boiss. and Heldr. grows in northern Morea and is probably the only European species yielding tragacanth. The tragacanth gum flowing from natural breaks in the bark caused by bursting assumes usually knobbed, grape-like and worm-like forms. It exudes from artificial cuts in leaf-form, from punctures in vermiform and thread-like pieces. Accordingly there is distinguished a) Leaf tragacanth (Blätter) from Smyrna, pieces flat, plane-conchoidal, marked superficially with curved, parallel ridges, white or yellowish, transparent or translucent, usually dull, horny and tough.

The homogenous, pure white article is obtained only by sorting. b) Worm and thread tragacanth (vermicelli) from Smyrna. Partly in ribbon-form, partly in thin, curved, vermiform, bent, knotted and rolled pieces; in color and quality like the foregoing. c) Syrian tragacanth in vermiform, knobbed or clustered pieces, many of which are yellowish or brownish with more marked glossiness. d) Morea tragacanth is an impure sort with knobbed, thread-like and irregular pieces. Tragacanth can be easily cut, is powdered with great difficulty and shows under the microscope a cellular structure. The walls of the cells swell in water. In their interior may be found starch grains, in part simple, in part compound, 4 to 10 μ in size. The best kinds have but few starch grains and the thickening layers of the cell walls are almost completely changed to slime.

In polarized light, tragacanth shows prismatic colors as a result of the mixture of two gummy constituents. The chief constituent of tragacanth is bassorin. Girond, 1875 (cited in 13), states that tragacanth consists of 60 percent of pectin substance. Bassorin only swells in water, therefore tragacanth in great part does not dissolve in water; it is not sticky, but after drying adheres strongly (Wiesner). The remainder is said to dissolve completely in large quantities of water (17). Grape sugar has also been found in thread-tragacanth (18). The ash is about 3 percent. The technical uses of tragacanth are very numerous: in finishing silk ribbons and laces, in thickening colors in cotton printing and in confectionery, in artificial flowers, ornaments, figures, etc. The annual export from Smyrna reaches about 4,500 cwt.

X. Bassora gum from *Acacia leucophlœa* Benth. consists of angular, shining, yellowish-brown tuber-like pieces but little soluble in water. It comes from India and is used for sophisticating gum arabic. It forms with borax no gelatine.

XI. Kutera gum, African tragacanth, from *Sterculia tragacantha* Lin. and *Sterculia ureus* Roxb. is similar to tragacanth and is used for adulterating it. It shows no structure and never starch grains. Ash, 7.8 percent (19).

XII. Chagual gum, Maguey gum, from *Puya coarctata* Gay. in Chili consists of topaz-yellow fragments of hollow cylindrical pieces, very rich in bassorin (4).

XIII. Tuna gum from *Opuntia Tuna*, Venezuela (20).

XIV. Cocoa gum, *gomme de coco*, *Haari tapan*, from the cocoa palm, with 70 to 90 percent of bassorin (4).

XV. Moringa gum, *gomme de ben-ailé*, from *Moringa pterygosperma* Gärtn. of India, comes in grains or threads and contains bassorin, dextrin, etc. (4).

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Author — Should pharmacy and chemistry speak the same language? With special reference to the nomenclature of alkaloidal salts. By Seward W. Williams. Reprint from Merck's Report. Pamphlet, pp. 31.

Author — Nomenclature and terminology of alkaloidal salts. A symposium of authorities with tabular summary by S. W. Williams. Reprint from Merck's Report. Pamphlet, pp. 29.

Reviews.

MEYER'S CONVERSATIONS-LEXICON. Ein Nachschlagewerk des allgemeinen Wissens. 5. gänzlich umgearbeitete Auflage. 17. Band. Turkos bis Zz. 1136 Seiten. Verlag des Bibliographischen Instituts in Leipzig. 1897. Preis $3.50.

With the publication of the 17th volume this great encyclopædia has reached its completion. Among the great number of interesting articles in this concluding volume, that on the United States of America will be of special interest to Americans as well as to those specially interested in or affiliated to that great and admirable country.

The completion of a publication of such a magnitude in intellectual work, in artistic and mechanical labor in every direction within four years is a remarkable accomplishment, requiring the investment of a large capital, great discrimination in finding and selecting the best expert talent, and labor and in adjusting every detail in the comprehensive machinery employed for the production of such a work, so as to attain to uniform results throughout the entire work. Notwithstanding all the mechanical and technical aid of such a perfect apparatus, and the large staff of expert labor and artist's skill centered in so great a book-manufacturing establishment, it is yet a remarkable feat to complete within less than four years 17 large-sized volumes of an encyclopædia containing more than 18,000 closely but clearly printed pages, 15,500 illustrations in the text, and 1088 chromos, colored plates, maps and plans, all of them masterpieces of the modern illustrating art, such as no other similar work even approximately offers.

The publishers as well as the authors, compilers and artists who jointly have produced this cyclopædia and whose names are not known to the reader, are deserving of due credit for the excellence and perfection of their labors and its results, which certainly are an honor to the German book trade. Among the foremost encyclopædias of our times not even the "Brittanica" excepted, Meyer's Conversatións-Lexicon stands in the front rank. Its marked superiority consists in its preciseness of style and diction, in thoroughness and reliability both of the text and the illustrations. Its information is in every particular up to date and its technical and artistic work and make-up are of unequalled excellence.

Whilst Meyer's Lexicon surpasses all others in preciseness, comprehensivness and newness of information and in the number and superiority of illustrations, its price is a comparatively low one.

Among the great encyclopædias of our time Meyer's has also met with universal appreciation and enjoys by far the widest circulation not only among German-speaking nations but among others as well.

An additional volume will be published in June 1898, containing comprehensive alphabetical indices and references which will serve promptly to find every subject-matter in the seventeen volumes which are not indicated by the special title of each article, as also historical, scientific, colonial, statistical and biographical information of most recent dates. *Fr. H.*

OTTO LUEGER'S LEXIKON DER GESAMTEN TECHNIK und ihrer Hilfswissenschaften. Im Verein mit Fachgenossen herausgegeben. Mit zahlreichen Abbildungen. Fünfter Band. Grundwasser bis Kupplungen. Deutsche Verlags-Anstalt, Stuttgart und Leipzig. Ein Bd., pp. 800. 1897. M. 25.00.

This monumental work as at first planned was to comprise five volumes. Under the hands of the editorial staff of more than a hundred specialists it, however, soon assumed larger dimensions and it was thought necessary to add two volumes. But even this addition, it soon became apparent, would not suffice and the publishers generously compromised with the subscribers and promised to distribute gratuitously to the regular subscribers any additional volumes that would become necessary.

The Review, in commenting on the fascicles and volumes that have appeared thus far, has principally called attention to the general value of this encyclopaedia as a reference work. These volumes are primarily intended for the engineer, it is true, but all educated persons are made to confront engineering topics if only in their general or newspaper reading. The term engineering is sometimes defined so as to include the various arts, and it is evidently in this broader sense that the term "gesamte Technik" is to be understood.

Having duely emphasized the general importance of this undertaking to the scientific student and even the intelligent laity, it may not be out of place at this time to point out somewhat in detail some of the specific information the pharmacist will find, e. g. in this the fifth volume.

Of pharmacognostical subjects, or rather of subjects which the German would consider as belonging to the field of pharmaceutische Warenkunde, the reader will find a considerable number, a few of which only can be mentioned. Several of the principal groups of vegetable excretions are treated in more or less detail. Thus, e. g. the gums (Gummi), the resins (Harze), guttapercha and caoutchouc (Kautschuk). A translation of the first article edited by Professor Hanausek and translated by Professor True will be found on p. 25 of this issue and will give the reader a better idea of the character of the various articles mentioned in this review.

The resins (Harze) are given only a page, but this is due to the fact that the individual resins are separately discussed under their respective primes. The gum resins thus treated are ammoniac, galbanum, gamboge, myrrh, olibanum. The balsams: Canada balsam, copaiva, gurjun, Peru, storax, turpentine and tolu balsam. Resins: aloe, benzoe, copal, dammar, dragon's blood, elemi, "Fichtenharz," colophonium, guaiac, shellac, mastix, sandarac, akarvoid resins.

Each article is supplied with a liberal citation of literature on the subject. On the whole the subjects are treated in an up-to-date manner. The new nomenclature on resin constituents suggested by Tschirch is adopted. Attention should be called to the fact, however, that the writer of these articles does not seem to have taken too much cognizance of the fact that there exists an American literature on some of these subjects. A peculiar positive error has crept into the article on camphor, in which this group is described chemically as consisting principally of tertiary alcohols, yet the first two of the four mentioned, menthol and borneol, are known to be secondary alcohols yielding the corresponding ketones menthone and camphor respectively, the latter being enumerated as the fourth of the "tertiary alcohols of the fatty series."

There are many other articles of pharmacognostical interest ranging all the way from a short paragraph to several pages in length. Chemistry is principally represented by the general articles on indicators, isomerism, isomorphism, ketones and carbohydrates (Kohlenhydrate) and by numerous specific articles on the salts of potassium (Kali) and of calcium (Kalk). Modern treatment is recognizable here as well, the ionic theory being called upon to explain the chemical mechanism of the use of the indicators. The recent work of Fischer naturally receives attention under carbohydrates.

In connection with a future volume special attention will be given to the treatment of chemical subjects.

Without reviewing the general scope of this volume, attention should, however, be called to a number of articles on sanitation and hygiene, some of which are treated in considerable detail and provided with abundant illustrative material. Grundwasser, Heizung geschlossener Räume, Hochbehälter, Kanalisation, Kanalwässer, Kläranlagen, Kloset und Krankenhaus are some of the primes that invite particular attention.

Finally, attention should be called to two articles, viz. those on Heraldik and Kunstgewerbe, as giving a good idea of the broad scope of the work and as affording good examples of the liberality with which the editors are provided with good illustrations supplementary to their text. The book work is of the usual excellence. All who have received the five volumes published will be pleased, no doubt, that the publishers have enlarged on their original plan and that they have not checked the editors in their desire to make as perfect and comprehensive a work as possible. *E. K.*

Missouri Botanical Garden. Eighth Annual Report. St. Louis, Mo. Published by the Board of Trustees, 1897.

Although the study of plants receives much attention in America, it is a matter of surprise that there are in this country so few botanical gardens. But among these there are some in which we may feel a genuine pride and satisfaction. The Missouri Botanical Garden is such an one. Here, through private munificence, have been established and maintained a park of great beauty and a garden offering unusual facilities for botanical scientific work.

As a result, the Annual Report is a very welcome publication to botanists, containing as it does, the most important results of research at the Garden. The volume at hand contains the reports of the board of trustees relative to the administration of the Shaw property and of the Garden. One expense item recalls the disastrous experience through which St. Louis, and with it the Garden, went on May 27, when the cyclone not yet forgotten passed over that part of the state. The repairs at the Garden made necessary by the storm reached nearly $4,500. The more significant items, the expenses connected with the library and the herbarium, seem to indicate that these are increasing materially in usefulness.

The director's report gives in detail what has been and is to be done at the Garden in various directions and can be but referred to in this place.

The scientific papers here presented deal in the main with the flora of the Azores. A paper on the mosses of the Azores by J. Cardot, based on the collections of Trelease, Brown and others, reports eighty species of mosses, excluding the sphagna. He describes and figures in eleven plates eight new species and three new varieties. He observes that the bryological vegetation of the Azores is closely allied on the one hand to that of Madeira and the Canary Islands and on the other to that of the Spanish peninsula and the shores of the Mediterranean.

Dr. Trelease, the director, reports his botanical observations in the Azores. Since this paper has already been noticed separately, no further discussion is given to this contribution in this place.

The volume contains a list of papers and books published from the Shaw School of Botany between 1885 and 1896 and from the Missouri Botanical Garden between 1889 and 1896, closing with a subject-index of the contents of the papers mentioned in these lists.

Rodney H. True.

JAHRESBERICHT UEBER DIE LEISTUNGEN DER CHEMISCHEN TECHNOLOGIE mit besonderer Berücksichtigung der Elektrochemie und Gewerbestatistik für das Jahr 1896. Jahrgang I—XXV bearbeitet von R. von Wagner. Fortgesetzt von Prof. Dr. Ferdinand Fischer in Goettingen. XLII. oder neue Folge XXVII. Jahrgang. Ein Bd. pp. XXVI, 1244, mit 262 Abbildungen. Verlag von Otto Wigand, Leipzig. 1897. M. 24.00.

A yearbook, especially one of as long standing as the one before us, as a rule requires no introduction. The Jahresbericht der chemischen Technologie, however, has not been brought annually to the attention of the readers of the Review. It, therefore, seems desirable to give a somewhat detailed account of its contents. The abstracts, for of such the heavy volume principally consists, are classified into ten large groups. Group I. is devoted to the chemical technology of fuels. Wood, peat, coal, cokes; petroleum, paraffin-industry; illuminating gas; illumination; fuel gas, etc. constitute several of the subdivisions. Group II. on chemical metallurgy is subdivided into a considerable number of sections, iron and the processes connected

with its manufacture coming in for a liberal share of space. Electrochemistry constitutes group III. and includes general matter pertaining to this subject, electricity as a source of heat, the electrochemical manufacture of metals, of other inorganic substances, of organic substances etc. Group IV. includes the inorganic, and group V. the organic substances that are produced by chemical factories. It is of interest to note that new remedies, alkaloids and volatile oils receive about as much space as the various dyestuffs. Group VI. includes glass, porcelain, cement and artificial stones; group VII. foods and beverages: flour and bread; starch; dextrin, glucose; beet sugar; cane sugar; fementation and yeast; wine; beer; spirit; milk, butter, cheese; meat and meat products; coffee, tea, cacao; other foodstuffs and beverages; fodders. Group VIII. takes up the chemical technology of fibres and their products, including paper. Under the heading of Sonstige organisch-chemische Gewerbe, group IX. includes fats and lubricants; fatty acids, soaps, glycerin; varnishes, paints; caoutchouc and like substances; tanning, glue; utilization of waste products, fertilizers; conservation of wood. Group X. finally discusses apparatus and presents interesting and valuable statistics regarding the number of chemists and laborers employed and concerning imports and exports. An authors' index of twenty-six and a subject index of twenty-eight double columns pages, also a list of German patents with references to the text conclude this valuable reference work.

Although the last group contains a list of chemical treatises published during the year, similar lists are appended to each group, occasionally also statistics. That no ideal system of classification can be devised must be apparent. It, therefore, becomes necessary at times to look under different headings to find all the Report presents on a given subject. Thus the electrolytic purification of sugar will not be found under beet sugar, but under electro-chemistry, the electro-chemical production, e. g. of gold, not necessarily in group II., but in group III. Almost two hundred journals are mentioned with abbreviations in the list of journals that have been used in the compilation of the Report. Yet in spite of this fact and the volume of the book it will, no doubt, be possible for specialists to find omissions. However this may be, the Jahresbericht is a veritable technical library in itself and will be found extremely valuable by chemical and pharmaceutical manufacturers and technical chemists. *E. K.*

KLEINASIENS NATURSCHAETZE: seine wichtigsten Thiere, Kulturpflanpflanzen und Mineralschätze vom wirthschaftlichen und kulturgeschichtlichen Standpunkt von Prem.-Lieut. Karl Kannenberg. Ein Bd., pp. XII, 278, mit 31 Vollbildern und 2 Plänen. Verlag von Gebrüder Borntträger, Berlin. 1897. Geb. M. 14.00.

From a pharmaco-geographical point of view, Asia Minor stands out like an isolated region or a world in itself. Its vegetable products are so various, so abundant and so important that when a pharmacognostical geography is published, Asia Minor will have to be accorded a place side by side with Europe, the Mediterranean Basin, and Africa. Any information, therefore, upon her resources, her agriculture, and commerce in those products useful in medicine and the arts will be welcomed by the modern pharmacognosist.

The book under consideration is divided into three parts with an appendix. The first part comprising, about 75 pages, is devoted entirely to animal life; the second part considers the most important plants under cultivation in Asia Minor, and the third part discusses the important mineral treasures. In an appendix the topographical features of the country, the water systems, and the climatic conditions of the various parts of the country are dwelt upon.

The pharmacist will naturally turn his attention to those products which are of greatest interest to him and these he will find in part two, since none of the animal drugs commonly employed in pharmacy are to be found in this country and the mineral drugs are not abundant.

Introductory to part two is a very complete bibliography of literature upon the physical and historical geography of Asia Minor, which is a most valuable feature. Following this, four pages are devoted to a discussion of various climatic conditions resulting from the peculiar topographical features of the land.

Under heading A the edible fruits, vegetables, spices, condiments, edible mushrooms, cereals, narcotic plants, and medicinal plants are located. Then the plants furnishing textile fibers, colors and resins, gums and balsams. Following this, plants noted for their beautiful flowers and foliage, and lastly woody plants growing wild and forest trees in general.

All through the work the Turkish and Greek names, which often give us a clue to the etymology of the German and English names

of drugs, are faithfully given, though there is no uniformity as to botanical titles. The author has added a feature by associating the names of drugs with those of cities, rivers, lakes and mountains. Thus for example Colophonium is derived from Colophon, Saffron from Safron boli and so on.

While much attention has been given to the introduction, cultivation, legal restrictions to the use of, and transportation of tobacco, comparatively little has been said of opium and nutgalls, which are most important products of this country.

We learn from this author that a condition of indolence exists among the farmers as in Italy, and that not one-half of the possibilities of the country are tested at all. Not more than one-half of the fertile soil is under cultivation, due largely to prolonged periods of drouth which are in turn due to the denuded condition of the forests. Otherwise the climatic conditions are so favorable that tropical, subtropical plants and those of the temperate zones would flourish here. The author points out the superior advantages of the country for colonization, estimating that results would be more fruitful than in the E. African colonies.

The book is resplendent with magnificent full-page half-tone engravings, of landscape scenery, dwellings, transportation methods and geological formations, which are truly complimentary to the engraver's art. Remarkable for its freedom from errors, excellent type, quality of paper and binding, Turkish and German index, this book, though not complete, gives a bird's eye view of Asia Minor's most important natural resources and offers therefore a valuable contribution to pharmacognosy. *J. O. Schlotterbeck.*

Das Charakterbild des Apothekers in der Litteratur. Von Hugo Maubach. Ein Bd. pp. v, 285. Verlag von Julius Springer, Berlin. 1898. M. 4.00; in Leinen geb. M. 5.00.

The task of the reviewer has never been more pleasant than in the present instance. The pharmacist who is not interested in the history of his calling is a professional monster and ought to seek some other means of livelihood whose traditions will be less marred by disinterestedness on the part of its disciples.

Such are the thoughts that involuntarily arise after having read the essays of Dr. Hermann Peters in his series entitled Aus pharmaceutischer Vorzeit or the chapters of the book lying before us.

German-reading pharmacists are certainly under obligations to the publisher of these books. This one, like the earlier ones mentioned above, is a veritable Christmas gift to the pharmaceutical profession. This character sketch of the apothecary in literature consists of a series of twenty-eight disconnected chapters, each chapter presenting one or more sketches from novels, auto-biographies, poems and plays in which the apothecary comes in for his share of characterization by almost as many authors. Even if the pen-picture is not always agreeable to look upon, every chapter, from the first to the last, is interesting, even fascinating. Although the pharmaceutical novel which has germinated in the pharmacy, has not yet been written, a fact which the author emphasizes repeatedly, the auto-biography of Martius verily reads like a novel, and because fact rather than fiction, is all the more instructive to the modern pharmacist.

The temptation to present some of the characters as depicted in this collection is great indeed, but it would scarcely be fair to pick out one and omit another. Literature evidently agrees with fact when it depicts good and bad characters. Be it said that although there are apparently many queer characters in our calling, most of them are thoroughly good at heart, many are even presented as fine specimens of mankind. Severe training and rigid discipline has produced, not ideal, but on the whole of sincere characters.

One thing, however, should be emphasized in a review of this book: it is the German apothecary whose character is depicted in these chapters. It is true, Shakespeare's apothecary in Romeo and Juliet comes in for consideration and a few general remarks about apothecaries of French and English literature are made in the introduction, but this is about all that is said about apothecaries not German. We fear that further additions of English and French colleagues would have added materially to that side of the book which is least bright. Why the author should call Shakespeare's apothecary "An Italian Colleague," simply because the scene is placed in Mantua, is not readily comprehensible. If the writer is not mistaken, it is generally supposed that Shakespeare's miserable creature corresponds better to the English than to the Italian prototype of that period.

While reading Maubach's book the writer missed one modern character whom he should have liked to see included: Provisor

Dingeldei by Hanns von Zobeltitz. A Rhenish proverb, though less agreeable, might also be added to the stock of popular sayings more or less incidentally brought out in the character sketches, viz: "Die Schneider, die Schuster und Apotheker, das sind die Gecken im Land." Possibly French influence shows itself in this.

No doubt, this book has helped to decorate many a pharmacist's Christmas table in the fatherland. It is certainly an ideal christmas present for young aspiring pharmacists everywhere and ought to find a place in the library of every pharmacist who reads German. There would be more of an ideal spirit in the ranks of pharmacists if such works as this one received more consideration. *E. K.*

ORGANIC CHEMISTRY FOR THE LABORATORY. By Dr. W. A. Noyes, Professor of Chemistry in Rose Polytechnic Institute, Terre Haute, Ind. One vol., pp. xi, 257. Chemical Publishing Co., Easton, Pa. 1897.

Although a number of laboratory manuals exists, there is no superabundance of good guides in the English language. The one before us is not merely intended for beginners, but is designed to satisfy the demands of more advanced students as well. It is not intended to be a complete treatise on organic chemistry, but a laboratory manual that is to be supplemented by a course of lectures on general organic chemistry. As such it well merits the inspection and careful consideration of all teachers of organic chemistry.

The author has been careful to discourage any mechanical work or slavish following of the text. Yet it will be important for those who desire to use the manual as a laboratory guide, to heed the introductory remarks. The discussion of special topics, such as crystallization, filtration, distillation, distillation under diminished pressure, extraction, etc., is given in connection with preparations when their use is required. Objections to such an arrangement are met by frequent references.

The book presents ninety-six problems in eleven chapters, from which the teacher may select those most adapted to his students. Each problem is supplied with literary references, which the student is expected to consult before he takes up his work, so that his views of the given compounds he prepares may not be one-sided. The book concludes with a chapter on the qualitative examination of carbon compounds. *E. K.*

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Pure Food and Drug Laws.

The Wisconsin pure food law has attracted no little attention during the past few months, not merely in Wisconsin, but in other states as well. Such headlines as "First Ohio, now Wisconsin" and editorials of like tenor indicate that the situation in Wisconsin is not always comprehended at a distance. Instead of quarelling with supreme courts and rendering sensational, entirely unlooked for interpretations, the Commission has had the laws amended during the last session of the Legislature so as to leave comparatively little room for attack on technical grounds. This lesson has by no means been generally learned. Laws are passed by the hundred during each legislative session, often with but little understanding. If after their passage lawyers find that they are full of flaws so that they do not accomplish those ends for which they were formulated, a great ado is made against the courts. Incidentally many parties have to suffer and the lawyers are the ones who reap the harvest.

The Wisconsin Commission did another thing for which it deserves to be commended. In due season, before the new law went into effect, it arranged a conference of representatives of the various boards interested in its enforcement. Instead of having one board pull this way and another that way, it has paved the way for harmonious action. Furthermore the druggists and other dealers in medicine have been informed of the results of this conference. It would be rash to predict that every one will be satisfied with this action, or that no friction will result. Something, however, has been done to avoid undue friction and sensational arrests. The manner in which

these arrests are conducted in some states has supplied the press with all the sensation that could be desired.

During the past month the wholesale grocers have held a conference and have asked the Food and Dairy Commissioner for an interpretation of the law. This was given and the prospect at present is that most wholesale grocers will try to live up to the law to their best understanding. At least one of the local druggist's associations, the largest in the state, has expressed its willingness to support the commission in its endeavors to enforce the new law, which is considered just.

It is unfortunate that a law, however perfect, sooner or later reveals itself as no unmixed good. The law demanding proprietary medicines containing poisons to be properly labeled was intended as a first stroke at this form of quackery. That the slightly milder form of quackery that is not directly affected by this law should benefit by it was in all probability not thought of. But no sooner has the law gone into effect when one of the boldest proprietary medicine men of the state avails himself of the opportunity to fortify his position before the public. In a large striking advertisement in the daily papers the "Doctor" informs the public that "Dr. S——'s Cough Cure is almost the only Cough Cure made without opium or chloroform in it. Such drugs are used merely to deaden your throat nerves—not to cure your cough. Remedies that contain them are dangerous to children and harmful to anybody. On January 1st a law went into effect in Wisconsin prohibiting the sale of such remedies unless their deadly ingredients are named on the bottle." Yet not many years ago this humanitarian "Doctor" had the audacity to proclaim to the public that he had discovered a new nervous system and therefore was more competent to come to the assistance of his poor suffering brethren than other medical men.

There are certain evils which it is exceedingly difficult to remedy through legislation. This is one of them. In such a case as this the best remedy, at least for a long time to come, is the slow course of public education. Druggists as a class and the daily press will, however, have to change their complexion very largely before any material improvement of the masses can be expected. Yet it is certainly an encouraging sign when a newspaper from which the above quotation has been taken announces its policy to refuse medical advertisements of the distinctly immoral type. *E. K.*

Criticism of a Proposed Method for the Assay of Senega.

By *Edward Kremers* and *Martha M. James.*

(Report of Research-Committee *G*, U. S. P. Revision.)

Langbeck (1881)[1] supposes it to be a generally observed fact that the odor of the officinal senega, which is slight in the fresh root, becomes much stronger by age. His observation that this odor is due to methyl salicylate evidently leads him to the opinion that he has a clue by which he can determine the approximate age of a commercial sample. He supposes the methyl salicylate together with sugar to be decomposition products of the senegin. A root which he considers to have been at least three years old contained 0.225 p. c. of ester. A root supposed to be at most a year old contained but a mere trace. A specimen from the Museum of the Pharmaceutical Society, the age of which is not given, contained methyl salicylate, more in the lower than in the upper part of the root, but no quantitative determination was made.

Reuter (1889)[2] contradicts the conclusions arrived at by Langbeck. He calls attention to the fact that earlier investigations have shown that sapogenin and sugar are the decomposition products of sopanin (senegin); further, that, as was to be expected, the fresh roots contain more ester than old roots, as the results of his assays are supposed to show. (See Table.) He, therefore, devises a method for the assay of the ester[3] and a little later an improved method.[4] Although he finds that a specimen described as false senega, derived possibly from either *Polygala alba* or *P. Boykinii*, contains traces of ester, he still holds that the test can be used to distinguish between genuine and false senega.[5]

H. C. C. Maisch[6] in 1890 found a trace of methyl salicylate in an air-dried specimen of the herb of *Polygala Baldwinii*, obtained from Florida, by Reuter's first method, but fresh specimens of herb and root which had become mouldy during transportation no longer contained the ester.

Bourquelot[7] in 1894 ascertained the presence of methyl salicylate

[1] Pharm. Ztg., 26, p. 260.
[2] Arch. d. Pharm., 227, pp. 309, 452, 549 and 927.
[3] Ibidem, p. 459.
[4] do., p. 549.
[5] do., p. 928.
[6] Am. Pharm. Journ., 62, p. 483.
[7] Compt. rend., 119, p. 802.

in the roots of *Polygala vulgaris* L., *P. depressa* Wenderoth, and *P. calcarea* F. Schultz.

Even a casual glance at the literature of this subject will cause the reader to be surprised at the sweeping conclusions that have been drawn by both Langbeck and Reuter from exceedingly meagre and at times by no means wholly trustworthy observations. While making a study of the literature on methyl salicylate, the writer was impressed with this fact and had a few tests made. A senega root, which, according to Reuter's assay method apparently contained no trace of methyl salicylate, gave off the ester when distilled with water to which a few drops of sulphuric acid had been added. Samples of root, which had ceased to give off recognizable quantities of methyl salicylate when distilled with water-vapor alone, yielded more ester after a small amount of sulphuric acid had been added. Whereas Reuter's contradiction of Langbeck's assumption that methyl salicylate is a decomposition product of senegin appears fully justified by the facts as far as known, it nevertheless may be true that the methyl salicylate given off by the root is a decomposition product, produced by the hydrolysis possibly of a glucoside. Neither does the assertion that by means of the methyl salicylate test true senega can be distinguished from false appear to hold good. At least one commercial specimen that was identified as false senega, in addition to the false senega examined by Reuter, and the roots of three species of *Polygala* examined by Bourquelot, yielded methyl salicylate. Inasmuch as the percentage of esters in the true senega apparently varies considerably, no percentage distinction can be laid down as a criterion between true and false. Whether the amount of methyl salicylate in senega root is at all indicative of the therapeutic value of the drug so that it could be assayed, though indirectly, appears very questionable. It certainly is too early to pass judgment on this question before the facts are more clearly understood. In fact, all of the remarks made by the writer should be considered but tentatively for the present. The writer hopes to have a more careful study of the subject made before very long. It seemed of interest, however, to call attention to the rather hasty conclusions that have been drawn heretofore from exceedingly meagre data. The analytical data which are incorporated in the table may be of interest as corroborating some of the statements made above.

Assayist.	Yield.	Description of Material.
Langbeck.	0.225 p. c.	1. At least 3 years old.
"	trace only	2. About 1 year old.
"	Distinct reaction	3. Lower part of root. } Age unknown.
	Faint reaction	4. Upper part of root. }
Reuter (p. 315).	0.28 p. c.	I. —"Southern." Age unknown.
"	0.25 "	II. —"Northern." " "
"	0.30 "	III.— do. " "
"	0.33 "	IV.— do. " "
"	None	V. —15 years old.
"	do.	VI. —"From Brussels." Age unknown.
Reuter (p. 483).	0.0033 p. c.	1. From Christy, dry, "middle" age.
"	0.175 "	2. " " age unknown.
"	0.45 "	3. " " " "
"	0.13 "	From German market, age as drug unknown. 4. young as to growth. "Electissima."
"	0.16 "	From German market, age as drug unknown. 5. older as to growth. "Depurata."
Reuter (p. 927).	Trace	a) False senega, probably from *Polygala Boykinii* or *alba*. Age unknown.
"	None	b) Japanese senega, probably from *P. tenuifolia*. Age unknown.
M. James.	0.2533 p. c.	1. Pressed senega from lb. package. In possession of retail druggist for about six months. Small root, broken.
	0.233 "	
" "	0.137 "	2. Bulk specimen. Age unknown. Average size root, color somewhat dark.
	0.186 "	
" "	0.1002 "	3. Bulk specimen. Age unknown. Large root, principally large part of main root with crown.
	0.0952 "	
" "	None	4. Bulk specimen. Age unknown. Large root, rather dark, principally main root.
" "	0.081 p. c.	5. From 1 oz. package. Age unknown. Broken, many pieces deprived of much of the cortex.
	0.081 "	
	0.09 "	
	0.092 "	
" "	0.127 "	a) True senega. 6. Bulk specimen. Age unknown. Large root, soft and spongy, color mainly light. Contained false senega which was sorted from the true.
	0.127 "	
	0.119 "	
	0.117 "	
	0.1257 "	b) False senega.
	0.153 "	
" "	0.2841 "	7. Bulk specimen. Age unknown. Odor of methyl salicylate could be distinctly recognized through the paper of the package.
	0.2445 "	
" "	0.0903 "	8. Bulk specimen. Age unknown. Large root, color medium, apparently fine quality.
	0.06 "	
J. A. Anderson.	0.0460 "	
	0.0406 "	
	0.0457 "	
M. James.	0.128 "	a) Roots. 9. Bulk specimen. Age unknown. Contained a large amount of stems which were sorted from the root.
	0.1004 "	
	0.1219 "	b) Stems.
	0.121 "	

Dr. R. H. True, Ass't. Professor of Pharmacognosy at the University, kindly examined the above enumerated specimens. As to the amount of material used in each assay, the quantity varied from 5 to 15 grams. The latter quantity is too large, since it sometimes requires from five to seven hours to complete the distillation. The distillate naturally is very bulky. As a rule five grams are a convenient quantity, yielding fairly accurate results. Where the percentage of ester is very small, it sometimes is preferable to use as much as 15 grams of root, because the color reaction with ferric chloride is at times obscured by other substances carried over by the water, a yellowish or brownish color predominating.

The method of assay by distillation as reported by Langbeck, Reuter and Maisch did not involve the use of an acid as an hydrolizing agent. In experiment No. 7, 15 grams of root were first distilled with water-vapor alone and a percentage yield of 0.0848 p. c. ester was obtained. The distilled root was then acidulated with sulphuric acid and the distillation with water-vapor continued. Additional ester to the amount of 0.1993 p. c. was obtained, making the total yield 0.2841 p. c. In the second experiment with the same root sulphuric acid was added directly and a percentage yield of 0.2445 p. c. was obtained.

Mr. J. A. Anderson also conducted a similar parallel experiment. Sample A of No. 8 was distilled by him with water-vapor pure and simple; sample B of the same root was at the same time distilled in like manner, but sulphuric acid was previously added. Whereas the distillate from A gave no reaction with ferric chloride, that of B gave abundant evidence of the presence of methyl salicylate. Then acid was added to A and upon continuation of the distillation methyl salicylate came over. Sample A yielded 0.0406 p. c. ester and sample B 0.0460 p. c. Another experiment conducted like B gave 0.0457 p. c. ester. These experiments seem to show conclusively that the addition of acid is necessary to obtain all of the ester either preexisting or capable of formation upon hydrolysis. They also explain why No. 8 gave a negative result when assayed by Mr. Anderson according to Reuter's method suggested in his second contribution.

As to the amount of acid necessary for hydrolysis it apparently makes no very appreciable difference whether from 8 to 10 drops or from 8 to 10 ccm. of contracted acid are used, it being understood that in each case the acid is properly diluted before being added to

the root. The first two results of No. 5 were obtained with the maximum quantity of acid, the last two with the minimum quantity of acid. With sample No. 4 it made no difference whether little or much acid was used, no ester was obtainable though six different experiments were made.

The differences between the results obtained in No. 8 seem to be due to the differences in the length of time distilled. One operator distilled but one-half hour and the other for several hours. It seems advisable, therefore, to continue the distillation even after the characteristic reaction for methyl salicylate has been obscured by the yellowish-brown coloration already referred to.

Popular Scandinavian Names of Drugs and Medicines.*

By *Harold Bruun.*

Rod, Nellik,	Water avens.
" Nyse, hvid,	White hellebore.
" " grön,	American hellebore.
" " sort,	Black hellebore.
" Peber,	Horse radish.
" Ratanhie,	Krameria.
" Rhabarber, ostindisk,	East Indian rhubarb.
" " tyrkisk,	Turkish rhubarb.
" Sarsaparilla, indisk,	Indian sarsaparilla.
" Slange, virginisk,	Virginia snake root.
" Viol,	Orris root.
Rose, Hunde,	Dog rose.
Roefrö,	Rape seed.
Rosenblade,	Rose leaves.
" mörkeröde,	" " dark red.
Rosenolje,	Oil of rose.
Rosiner,	Raisins.
Rosmarinblade,	Rosemary.
" olje,	Oil of Rosemary.
" sump,	Marsh rosemary.

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* Copyrighted. Continued from p. 24.

Röllikeblomster,	Yarrow.
Romersk Karveolje,	Oil of cumin.
Rude,	Rue.
Rudeolje,	Oil of rue.
Rude, Gjed,	Goat's rue.
Rygende Salpetersyre,	Fuming nitric acid.
Rygende Svovlsyre,	" sulphuric acid.
Reduceret Jern,	Reduced iron.
Rottekrudt,	Arsenic.
Saebe,	Soap.
" rod,	Soaproot.
" salve,	Soap cerate.
" traebark,	Soaptree bark.
" urtbark,	Soaptree bark.
Saetmel,	Starch.
Safran,	Spanish saffron.
" amerikansk,	American saffron.
Salat,	Gardenlettuce.
Salep, vestindisk,	Arrow root.
Salicylsyre,	Salicylic acid.
Salmiak,	Ammonium chloride.
" spiritus,	Ammonia water.
" " aromatisk,	Aromatic spirits of ammonia.
Salpeter,	Potassium nitrate.
Salpetersurt Bly,	Lead nitrate.
" Kali,	Potassium nitrate.
" Natron,	Sodium nitrate.
Salpetersyre,	Nitric acid.
" fortyndet,	" " dilute.
" rygende,	" " fuming.
Salt, Bitter,	Sulphate of magnesia.
" Engelsk,	" " "
" Glauber,	Sulfate of sodium.
" Hjortetaksalt,	Carbonate of ammonium.
Slangerod, virginisk,	Virginia snake root.
Smörblomster,	Butter cup.
Smörfarve,	Butter color.
Smörkokao,	Cacao butter.
Soda,	Carbonate of sodium.

Soda, Kjökken,	Bicarbonate of sodium.
" Vaske,	Carbonate of sodium.
" Aets,	Caustic soda.
Solblomster,	Sunflower.
Solros,	"
Sort Beg,	Black pitch.
" Nyserod,	Black hellebore.
Sort Peber,	Black pepper.
Spanskfluer,	Cantharides.
" kollodium,	Cantharidal collodion.
" plaster,	,, plaster.
Spanskgrönt,	Subacetate of copper.
" fluepapir,	Cantharidal paper.
" humleolje,	Oil of origanum.
" peber,	Capsicum.
Spermacetsalve,	Spermaceticerate.
Spirmynte,	Spearmint.
" olje,	Oil of spearmint.
Spiritus, Ammoniak,	Ammonia water.
" " anisholdig,	Aromatic spirits of ammonia.
" Lavendel, sammensat,	Compound spirit of lavender.
" Salmiak,	Ammonia water.
Sprengelbalsam,	Balsam Peru.
Spydglandsoxyd,	Oxide antimony.
Stedmorsblomster,	Violets.
Stenolje,	Rock oil.
Stinkenesle,	Hedge nettle.
Stivelse,	Starch.
Stjerneanis,	Star anise.
Storkenaeb,	Cranesbill.
Stokfisklevertran,	Cod liver oil.
Stormhatblade,	Aconite leaves.
Stormhatrod,	" root.
Strandlög,	Squills.
Strandlög Eddike,	Vinegar of squills.
" Sirup,	Syrup of squills.
" " sammensat,	" " " , compound.
" honning,	Oxymel of squills.
Strandmalurt,	Santonica.

Strandvalmue,	Horn poppy.
Sukker,	Sugar.
Sukkersirup,	Syrup.
" kolör,	Caramel.
Sumak,	Sumach.
" Garver,	Currier's sumach.
" giftig,	Poison oak.
Sump, Persille,	Marsh parsley.
" Rosmarin,	" rosemary.
Sure Kaneldraaber,	Aromatic sulphuric acid.
Surklöver,	Wood sorrel.
Spirit Aris,	Muriatic acid.
Surt kulsurt Kali,	Bicarbonate of potassium.
" " Natron,	Bicarbonate of sodium.
" vinsurt Kali,	Cream of tartar.
" Chinae decoct,	*Decoctum chinæ acidum.*
Svampflue,	Fly fungus.
" fyr,	Surgeon's agaric.
" Vaske,	Sponge.
Svinefedt,	Lard.
Svovl,	Sulphur.
Svovlblomme,	Sulphur, pure.
" calcium,	Sulphide of calcium.
" kalium,	Sulphuretted potassa.
" lever,	" "
" kulstof,	Bisulphide of carbon.
" melk,	Milk of sulphur.
" spydglands,	Sulphide of antimony.
" syre,	Sulphuric acid.
" syre, fortyndet,	" " dilute.
Svovlsur Magnesia,	Sulphate of magnesia.
Svovlsurt Atropin,	Sulphate of atropine.
" Jernoxydul,	Sulphate of iron.
" Kadmium,	" " cadmium.
" Kviksölvoxyd,	" " mercury.
" Kobberoxyd,	" " copper.
Syre, Baldrian,	Acid, valerianic.
" Benzoe,	" benzoic.
" blaa, fortyndet,	" hydriodic, dilute.

Syre, Citron,	Acid, citric.
" Eddike,	" acetic.
" " fortyndet,	" " , dilute.
" Galaeble Garve,	" tannic.
" Garve,	" gallic.
" Karbol,	" carbolic.
" Melke,	" lactic.
" Myre,	" formic.
" Oxal,	" oxalic.
" Phenyl,	" carbolic.
" Phosphor,	" phosphoric.
" " fortyndet,	" " , dilute.
" Pikrin,	" picric.
" Rav,	" succinic.
" Salicyl,	" salicylic.
" Salpeter,	" nitric.
" " fortyndet,	" " , dilute.
" Salpeter-salt-,	" nitromuriatic.
" Salt-	" muriatic.
" " fortyndet,	" " , dilute.
" Svovl,	" sulphuric.
" " aromatisk,	" " , aromatic.
" " fortyndet,	" " , dilute.
" " rygende,	" " , fuming.
" Vin,	" tartaric.
Syresalt,	" oxalic.
Söde Mandler,	Sweet almonds.
Sölverglöd,.	Oxide of lead.
Sölvoxyd,	Oxide of silver.
" salpetersurt,	Silver nitrate.
Talg,	Tallow.
" Faare,	Mutton tallow.
" Oxe,	Beef tallow.
Talk,	Soap stone.
Tamarinder,	Tamarind.
Tandpinedraaber,	Tooth drops.
Tandpinetrae,	Prickly ash.
Tandpulver,	Tooth powder.
Taxtrae,	Yew tree.

Terpentin,	Turpentine.
" venetiansk,	Venetian turpentine.
" olje, raa,	Oil of turpentine, crude.
" salve,	Turpentine ointment.
" renset,	Oil of turpentine, rectified.
The, bitter,	*Species amaræ.*
" canadisk,	Wintergreen.
" Enebaer,	*Species juniperi.*
" Hamburg,	" *Hamburg.*
" St. Germain,	" *St. Germain.*
" Bryst,	" *pectoralis.*
Tinctur, Malurt,	Tincture of worm wood.
" aromatisk,	" , aromatic.
" Baevergjaeld,	" of castoria.
" bitter,	*Tinctura amara.*
" Colokvint,	Tincture of colocynth.
" Pommerants,	" of orange.
" Spanskflue,	" of cantharides.
Timianolje,	Oil of thyme.
Tidlöserod,	Colchicum root.
Tidlösefrö,	" seed.
Tjaere,	Tar.
" vand,	Tar water.
Tobaksblade,	Tobacco leaves.
Tolubalsam,	Balsam tolu.
Trae, Ask,	Ash.
" Campeche,	Logwood.
" Cedarrod,	Red cedar.
Tran,	Cod liver oil.
Traekplaster,	*Emplastrum gummosum.*
Traekul,	Charcoal.
Tragantha gummi,	Gum tragacanth.
Tulipantrae bark,	Tuliptree bark.
Tung braendt Magnesia,	Heavy magnesia.
" spat,	Sulphate of barium.
" Vinolje,	Heavy oil of wine.
Tusendyder,	European centaury.
Törstetrae bark,	Frangula bark.
Tröskesaft,	Borax and honey.

Umoden Pommerants,	Unripe oranges.
Urt, indisk,	Wild yam.
" Johannes,	St. John's wort.
" Pung,	Shepherd's purse.
Valmuefrugter,	Poppy heads.
" strand,	Horn poppy.
Vand,	Water.
Vandfenkelfrö,	Water fennel.
Vandglass,	Waterglass.
Vandkarse,	Nasturtium.
Vandlilje,	Water lily.
Vanille,	Vanilla.
Vaskesoda,	Carbonate of sodium.
Vaskesvamp,	Sponge.
Venushaar,	Maiden hair.
Ved, Guajak,	Guaiac wood.
" Quassia,	Quassia wood.
" Sandel,	Sandel wood.
Venetiansk Terpentin,	Venice turpentine.
Vild Agurk,	Wild cucumber.
" Kirsebaerbark,	Wild cherry bark.
" " sirup,	Syrup of wild cherry.
" Merian,	Origanum.
Vin, Braek,	Wine of ipecac.
Vinolje, tung,	Heavy oil of wine.
Vinsten, Braek,	Tartar emetic.
Vineddike,	Acetic acid.
Vinaand,	Alcohol.
Vienus,	Copper.
Vinstenflöde,	Cream of tartar.
Vinsten, Jern,	Tartrate of iron and potassium.
Vinsurt Kali,	Tartrate of potassium.
Vinsyre,	Tartaric acid.
Vintergrön,	Wintergreen.
Violblomst,	Violet.
Violrod,	Orris root.
Virak,	Frankincense.
Vismutoxyd,	Oxide of bismuth.
Vismuth, basisk kulsurt,	Subcarbonate of bismuth.

Vismuth, basisk salpetersurt,	Subnitrate of bismuth.
Vismuth,	Bismuth.
" tannat,	" tannate.
Vitriol, blaa,	Copper sulphate.
" grön,	Iron sulphate.
" hvid,	Zinc sulphate.
" Jern,	Iron sulphate.
" Kobber,	Copper sulphate.
" olje,	Sulphuric acid.
Vox, gult,	Yellow wax.
" hvid,	White wax.
" salve,	Simple cerate.
Voxmyrte,	Barberry.
Zinkoxyd,	Oxide of zinc.
Zink, Brom,	Zinc bromide.
" Chlor,	Zinc chloride.
" Cyan,	Zinc cyanide.
" hvidt,	Zinc oxide.
" salve,	Zinc salve.
" vand,	Solution of zinc sulphate.
" vitriol,	Zinc sulphate.
Zinkoxyd, baldriansurt,	Zinc valerianate.
" eddikesurt,	" acetate.
" kulsurt,	" carbonate.
" svovlsurt,	" sulphate.
Zinnober,	Vermilion.
Öienvand,	Eye water.

(To be continued.)

Early Phases in the Development of Pharmaceutical Legislation in Wisconsin.*

By *Edward Kremers.*

As already stated,† a petition was presented to the Common Council by a number of druggists by way of a counter demonstration to the movement that had its birth in Mr. Kienth's drug-store [*See*

* Continued from Vol. 15, p. 245.
† Vol. 15, p. 223.

Documents 10—13]. After repeated attempts to find such a petition in the City Clerk's office had failed, it has at last been discovered. Judging from the similarity of handwriting and ink it was Mr. Louis Kahlhoff who wrote or at least copied the petition. It seems highly probable that he also drafted it. Like most of the other documents it is not easily available, and is therefore reproduced here. [*Document 23.*] The petition is self-explanatory except as to motive. It is to be hoped that one or more of the signers of the petition will express themselves definitely on this point.

The petition as also stated above, was referred to the Board of Health and the City Attorney [*See Document 13*], evidently without any comment on the part of the Common Council. [*See Documents 13 and 14.*]

At the meeting of the Common Council on Nov. 8, Alderman Wall from the Board of Health reported that it was the opinion of the City Attorney that the Council had no authority to legislate in the matter, but that the subject came more properly within the province of the state legislature. The opinion of the City Attorney is not contained in the printed Proceedings but is still filed in the City Clerk's office. A copy is herewith appended, [*Document 24*], also the newspaper reports of this action. [*Document 25.*] The report of the committee as contained in the Proceedings of the Common Council is also appended. [*Document 26.*] The report seems to have been adopted without any discussion and referred to the Committee on Legislation. This committee reported Jan. 17, 1876; that part of the report, however, which pertained to the regulation of the practice of pharmacy was laid over. [*Document 27.*]

The Sentinel of Jan. 15, p. 3, col. 1, i. e. two days before the meeting of the council contains what appears to be a complete text of the draft of proposed changes to the city's charter. The Sentinel of the 17th and 18th comments on various chapters of the proposed amendment, but does not discuss the druggist act.

Whereas the city clerk disposed of this act by the curt remark "laid over", the various papers give us more additional information. The principal objection was evidently raised by Alderman Schuengel who was of the opinion that the practice of medicine was fully as much in need of regulation and control as that of pharmacy. [*Document 28.*] In accordance with a previously adopted resolution, sections objected to were laid over for later consideration.

The next meeting of the Common Council was held on the 21st and again the printed Proceedings throw no light on the action or lack of action by the Common Council. [*Document 29.*] The papers, however, inform us that the City Attorney had been waited upon by a number of druggists who objected to the amendment and requested that action be postponed for a week. This would give them an opportunity to hold a meeting and to suggest such modifications as they deemed of importance. [*Document 30.*]

*Document 23.**

To the Honorable Mayor and Common Council, City of Milwaukee.

We the undersigned Druggists of the City of Milwaukee would respectfully represent, that a suitable law should be passed in this City regulating the keeping of shops for the purpose of retailing Drugs, Medicines, or such chemicals as are used in compounding medicines and persons engaged in the business of compounding and putting up prescriptions of physicians and vending medicines either as proprietor, agent or assistant, without having first obtained a Certificate of qualification and Competency, after due and impartial examination for such business by a board of Commissioners to be provided for said purpose consisting of three physicians and one Druggist, and the undersigned do further pray that the laws now existing regulating the sale of poisons be strictly enforced.

The great number of errors occurring in compounding Physicians Prescriptions and in vending medicines which have produced so many fatal results throughout the United States, are always caused by persons incompetent to be in a Drug Store and many such mistakes and deaths will occur in the future unless suitable laws are passed, with heavy fines attached, preventing incompetent persons to engage in such business.

John H. Tesch.	Otto Schorse.
Amand Wirth.	A. F. Kalckhoff.
P. L. Dohmen.	Henry Fess, Jr.
J. M. Allcott.	John A. Dadd.
Louis Kalckhoff.	E. L. Babcock.
J. Vertessy.	Theo. Mueller.
Christian Widule.	Herman Hackendahl.
G- T. Platzer.	Dr. L. Weise.
H. C. Beverung.	Strohmeyer & Co.
H. J. L. Meyer.	J. A. Moritose.
L. H. Wehmer.	F. Esau.
Rud. Mieding.	Chas. F. Engel.

* This document as well as other documents pertaining to pharmaceutical legislation will be found in the archives of the City Clerk's office under date of Feb. 7, 1876.

Document 24.

City Attorney's Office,

Milwaukee, Wis., Oct. 18. 1875.

To the Board of Health,

Gentlemen.

I have examined the petition of several druggists of this city, which was referred to me by your Board, praying for the passage of a law to prevent incompetent persons from conducting the business of druggists and apothecaries in this city.

The public good undoubtedly demands the enactment of such a law and I would have been glad to have aided the petitioners in accomplishing their laudable object, but under the present charter of the city, I do not believe it would be competent for the Common Council to pass an ordinance as is requested. The subject belongs more properly before the Legislature, and will, I doubt not, receive a favorable consideration at the hands of that body, when laid before them.

Respectfully submitted, Emil Wallber, City Attorney.

Document 25.

[*Banner und Volksfreund*, 9. Nov. 1875, p. 4, col. 3.]

Stadtverwaltung.

* * *

Vom Gesundheitsausschuss: Ein Gutachten vom Stadtanwalt Emil Wallber auf ein von Milwaukeer Apothekern eingereichtes Gesuch um Eingreifung geeigneter Massregeln, damit es künftig verhindert werde, dass unerfahrene und unwissende Personen dem Apothekergewerbe obliegen.

Der Stadtanwalt meint, es stehe der Stadt nicht zu, irgend welche Gesetze zu solchem Endzweck zu erlassen.

Auf Antrag des Alderman Johnston wurden Gesuch und Gutachten an den Ausschuss für Gesetzgebung verwiesen.

[*Germania*, 9. Nov. 1875; p. 3, col. 3.]

Stadtraths-Verhandlungen.

Das Gesundheits-Comite berichtete über die Petition von Apothekern, in welcher dieselben um Erlassung einer Ordinanz nachsuchten, nach welcher nur competente Leute in Apotheken angestellt werden dürften. Der Bericht war von einem Gutachten des Stadtanwalts begleitet, welcher das Gesuch als ein für das öffentliche Wohl sehr nothwendiges erachtet und es von Herzen befürwortet, aber er sagt, der Charter erlaube die Erlassung einer derartigen Ordinanz nicht. Das Gesuch sollte vor die Legislatur gebracht werden, wo es ohne Zweifel eine günstige Aufnahme finden wird. An das Comite für Gesetzgebung verwiesen.

[*Der Seebote*, 9. Nov. 1875, p. 4, col. 4.]

Kurzgefasstes.

* * *

In Bezug auf das von Milwaukeer Apothekern an den Stadtrath ergangene Gesuch um Eingreifung geeigneter Massregeln, damit es künftig verhindert werde, dass unerfahrene und unwissende Personen als Apotheker fungiren, hat der Stadtanwalt sein Gutachten dahin abgegeben, dass der Stadt kein Recht zustehe, ein derartiges Gesetz zu erlassen.

[*Der Seebote*, 11. Nov. 1875, p. 4, col. 6.]

Stadtrathsverhandlungen.

* * *

Ald. Wall, Referent der Sanitätsbehörde, an welcher die Petition des John H. Tesch und anderer Apotheker um Erlassung eines Gesetzes behufs Regelung des Verkaufes von Droguen und Arzneien, der Zubereitung von Arzneien nach ärztlichen Rezepten und der Ausstellung von Certificaten an alle im Apothekerfache beschäftigten Personen verwiesen worden, unterbreitete ein Gutachten des Stadtanwalts, worin es heisst, der Stadtrath habe nicht die Befugniss, eine Verordnung in dem bezeichneten Sinne zu erlassen. Dies sei Sache der Legislatur.

Dem Legislaturausschusse zugewiesen.

[*Sentinel*, Nov. 9, 1875, p. 8, col 2.]

Common Council.

* * *

Health — Opinion of the City Attorney that it is not advisable for the Council to pass an ordinance regulating the sale of poisons. Referred to the Committee on Legislation.

Document 26.

Proceedings of the Common Council ending April 21, 1876, p. 200.

Ald. Wall, from the Board of Health, to which was referred the petition of J. H. Tesch and other druggists of the city, praying for the passage of a law to prevent incompetent persons from conducting the business of druggists and apothecaries in the city, presented an opinion obtained from the City Attorney on the matter, which stated that he did not believe it would be competent for the Common Council to pass an ordinance as requested, the subject being more properly for the Legislature.

Referred to the Committee on Legislation.

Document 27.

Proceedings of the Common Council, Jan. 17, 1876, p. 234.

Ald. Chase presented a report from the Committee on Legislation, containing certain amendments to the city charter, and moved that the city attorney be requested to read the amendments section by section.

Which was agreed to.

Ald. West moved that where no objection was made to any section it should be considered approved, and those objected to laid over for future action..

Which was concurred in.

The amendments were then read by the city attorney, as follows: ——-

Laid over. * * *

SEC. 5. The following sections are hereby added to chapter XIII, of said chapter 184 of the laws of 1874.

SEC. 18. Hereafter no person shall compound medicines or put up prescriptions of physicians in the city of Milwaukee, either as proprietor, agent, assistant or clerk, without having first obtained a certificate of qualification and competency therefore, from the commissioners to be appointed under the provision of the succeeding sections, and any person who shall do so, shall be punished by fine of not less than $25 or more than $200 for each offence, to be recovered in an action brought in the name and on behalf of the city of Milwaukee before the Municipal court of Milwaukee county, or by imprisonment for not less than three months and not more than three years, or by both such fine and imprisonment in the discretion of the court provided, however, that the provisions of this and the succeeding sections of this chapter shall not be so construed as to apply to physicians compounding or putting up their own prescriptions.

SEC. 19. On the first Monday of May, A. D. 1876, the Mayor of said city, with the approval of the Common Council, shall appoint three persons competent to perform the duties herein imposed upon them, who shall be styled "The Commission of Pharmacy and Practical Chemistry of the city of Milwaukee," one of whom who shall hold his office for one year, one for two years, and the third for three years, and each until his successor is appointed and qualified; and at or before the expiration of the term of office of each person so appointed, the mayor in like manner shall appoint a like person to said office, who shall hold his office for three years, or until his successor is appointed and qualified. Two of the members of said commission shall be practicing physicians in said city, and the third shall be an apothecary in said city in good standing.

In case a vacancy in said commission shall occur at any time from any cause, the mayor, with the approval of the Common Council, shall appoint a competent person to fill said vacancy for the unexpired part of the term of office of the person causing such vacancy.

Before entering upon the duties of his office, each commission shall be sworn to faithfully discharge the duties of his office, and the record thereof shall be made on his commission.

It shall be the duty of the commissioners appointed, as aforesaid to examine all persons who shall desire to engage in the business of com-

pounding medicine or putting up prescriptions of physicians, and if found skilled and learned in pharmacy, they shall give such persons certificates, signed by at least two of said commissioners, and shall state therein, that the person, to whom the same is issued, is a skilled pharmaceutist, and authorized to compound medicines and put up prescriptions of physicians.

SEC. 20. The said commissioners shall procure from the comptroller of said city, and keep a suitable book at the office of the city clerk of said city, wherein they shall enter the names and places of residence of all persons to whom they shall issue said certificates after an examination, and the date thereof, which book shall be open to the examination of all persons at all reasonable times.

SEC. 21. The said commissioners shall meet at the office of the Board of Health in the city of Milwaukee at least once in each month, and they shall give public notice for three days previously in the official papers of said city, of the time and place of their meetings, the expense of which publication shall be defrayed by said city. Neither of the said commissioners shall ever receive any salary or other compensation for his services.

SEC. 22. No druggist, apothecary or physician in the city of Milwaukee shall engage, employ, keep or permit any person who shall not have obtained a certificate of qualification and competency from the said commissioners, to compound medicines or put up prescriptions of physicians, and any druggist, apothecary or physician who shall do so, shall be punished by fine of not less than $25 nor more than $200 for each offence, to be recovered in an action brought in the name and on behalf of the city of Milwaukee before the Municipal Court of Milwaukee County, or by imprisonment for not less than three months and not exceeding three years, or by both such fine and imprisonment, in the discretion of the court. Laid over.

Document 28.

[*Banner und Volksfreund*, 18. Jan. 1876, p. 4, col. 5.]

Stadtverwaltung.

* * *

Der Gesetzgebungsausschuss erstattete hierauf den, in unseren Ausgaben vom 17. und 19. Januar 1876 vollständig veröffentlichten Bericht. Stadtanwalt Emil Wallber verlas denselben:

* * *

7. Jeder Apotheker soll künftig durch eine Commission, aus drei Pharmazeuten und Chemikern bestehend, geprüft werden und, im Falle er als tüchtig befunden wird, ein Qualifikationscertifikat erhalten, welches ihm verstattet, in der Stadt Milwaukee als Apotheker zu wirken. Apotheker, welche die Behörden ohne Qualifikationscertificat antreffen, sollen entsprechend bestraft werden.

Auf Antrag des Alderman Schuengel wurde das Amendement zur Debatte bei Seite gelegt. Herr Schuengel meinte, man solle demselben ähnliche Be-

stimmungen bezüglich ärztlicher Praxis einverleiben, um die Stadt Milwaukee vor dem Heer der Charlatans, Quacksalber und Pfuscher, die ihren Unfug treiben und aus Unwissenheit Personen vergiften, zu befreien.

* * *

Eine langwierige Debatte über das Amendement, welche eine Prüfung sämmtlicher, in Milwaukee wirkender Apotheker verfügt, erfolgte.

[*Evening Wisconsin*, January 18, 1876, p. 4, col. 2.]

The Amendments.

The next amendment was providing that no druggist or other person shall compound medicines or put up prescriptions without having a certificate from the three Commissioners to be appointed by the Mayor on the 1st of May, 1876, to be called the Commissioners of Pharmacy and Practical Chemistry of the city of Milwaukee. Said commissioners shall be three in number, two physicians and one apothecary in good standing, and no druggist shall employ any clerk or other persons to compound medicines, who shall not possess the certificate mentioned above.

This does not apply to physicians compounding their own prescriptions. The fine for disobedience shall not be less than $25 nor more than $200, or imprisonment for not less than three months nor more than three years—or both. Laid aside.

* * *

In regard to compounding medicine, the amendments were laid over.

[*Germania*, 18. Jan. 1876; p. 3, col. 1.]

Stadtraths-Verhandlungen.

Special-Sitzung.

Unbeendigte Geschäfte.

Der Bericht des Comites für Gesetzgebung, welches die Amendements zum Stadt-Charter und sonstige weitere Gesetze entworfen, wurde sodann entgegengenommen.

Man kam dahin überein, die Sectionen einzeln vorzunehmen und die, wogegen Einwendungen gemacht würden, einstweilen bei Seite zu legen, die anderen zu passiren und dann über die bei Seite gelegten zu debattiren.

Stadt-Anwalt Emil Wallber verlas die einzelnen Amendirungen und gab die dazu nöthigen Erläuterungen.

* * *

Hierauf kamen die Sect. 18, 19, 20, 21 und 22, welche dem Kapitel 13 hinzugefügt werden sollen, an die Reihe. Dieselben enthalten die Bestimmungen für Apotheker und deren Gehülfen. Darnach dürfen nur wissenschaftlich gebildete Personen zur Anfertigung von Recepten angestellt werden. Nach einiger Debatte bei Seite gelegt.

* * *

Das nächste war die Apotheker-Bill. Ald. Schuengel wollte eine Section hinzugefügt wissen, nach welcher jeder Arzt sein Universitäts-Diplom beim Stadt-Clerk zu registriren hat und nur solche Aerzte praktiziren dürfen.

Ald. Bentley wünschte die Stelle gestrichen zu haben, welche einen "Board" von drei Aerzten vorschreibt; er ist der Ansicht, dass der Gesundheitsarzt dies versehen könne.

Nun entstand ein kleines Durcheinander; einige Aldermen wünschten, dass die bei Seite gelegten Amendements, erst gedruckt werden sollten, ehe weiter damit fortgefahren wird.

Nach einigem Unterhandeln wurde die Apotheker-Bill übergelegt.

[*Herold*, 18. Jan. 1876, p. 3, col. 2.]

Extrasitzung des Board of Aldermen.

* * *

Die auf eine von allen Pharmazeuten zu fordernde Beweisablegung für ihre Tüchtigkeit Bezug habende Gesetzverordnung stiess auf den Widerstand des Herrn Schuengel und wurde ebenfalls zurückgelegt.

* * *

Nun ging der Board daran, über die zurückgelegten Amendments zu debattiren. Zuerst kam die Pharmazeutenbill zur Sprache.

Alderman Schuengel beantragte einen Zusatz zu dem Amendment zu machen, dahingehend, dass auch Aerzte ihr Diplom auf der Office des City Clerks deponiren müssen.

Alderman Wolf nannte dies eine gute Idee. Die Quacksalber, sagte er, haben jetzt schon einen guten Mann beinahe getödtet, man solle die Quacks ferne halten.

Alderman Bentley beantragte, diese Angelegenheit in die Hände des Board of Health zu legen, stiess aber auf energischen Widerstand, und wurde schliesslich die Angelegenheit bis auf Weiteres zurückgelegt.

[*Seebote*, 19. Januar 1876, p. 4, col 6.]

Stadtrathsverhandlungen.

(Offizieller Bericht.)

* * *

Abschnitt 5. Die folgenden Abschnitte werden hiermit dem Kapitel XIII des besagten Kapitels 184 hinzugefügt:

Abschnitt 18. Künftig soll Niemand weder als Besitzer, Agent etc..... [German translation of document 27.]..... Zurückgelegt.

[*Sentinel*, Jan. 18, 1876, p. 2 col. 1.]

Charter Amendment.

* * *

Commission on Pharmacy.

The section establishing a commission on pharmacy by appointment of the Mayor was next considered.

Mr. Schuengel remarked that this would punish the devils' grandmother instead of the devil. He thought the ignorant physicians of the city, those who had never received an education to fit them for their profession, should be subject to regulation as well as druggists. The Alderman was at that moment suffering from poison prescribed by an ignorant physician.

The amendment was laid over for further consideration.

Document 29.

Proc. Common Council, Jan. 21. 1876. p. 241.

The amendment to chapter 13 of said chapter 184, by adding five sections in relation to the qualification of persons appointed to compound prescriptions of physicians and for the appointment of a board to consist of two physicians and one apothecary to give certificates of qualification.

Which was recommitted to the Committee on Legislation.

Document 30.

[*Germania*, 22. Jan. 1876; p. 3, col. 3.]

Stadtraths-Verhandlungen.

Das Comite für Gesetzgebung berichtete, dass es die Clausel in der Bill des Gesundheitsrathes, welche die Creirung eines Boards zur Examinirung von Pharmaceuten anordnet, zurückzieht, da es kein neues Amt zu gründen wünscht.

Angenommen. * * *

Die Apotheker-Verordnung wurde an das Comite für Gesetzgebung zurückverwiesen, da Stadtanwalt Wallber meldete, dass ein Comite von Apothekern ihn darum ersuchte. Die Herren wollen nämlich eine Versammlung einberufen um ein besseres und passenderes Gesetz zu entwerfen.

[*Evening Wisconsin*, January 22, 1876, p. 3, col. 2.]

The Amendments.

The next amendment, that relating to persons who shall compound medicines, was again referred to the Committee on Legislation, in order to allow the druggists to hold a meeting to suggest changes.

[*Sentinel*, Jan. 22, 1876, p. 3, col. 2.]

Common Council.

* * *

The Druggist Act.

Attorney Wallber stated that he had been waited on by a number of druggists who objected to the amendment regulating their business, and requested that it be laid over for one week. They would in the meantime hold a meeting and suggest such modification as they deemed of importance.

Mr. Michael Kraus moved that the amendments be referred to the Committee, which was concurred in.

(To be continued.)

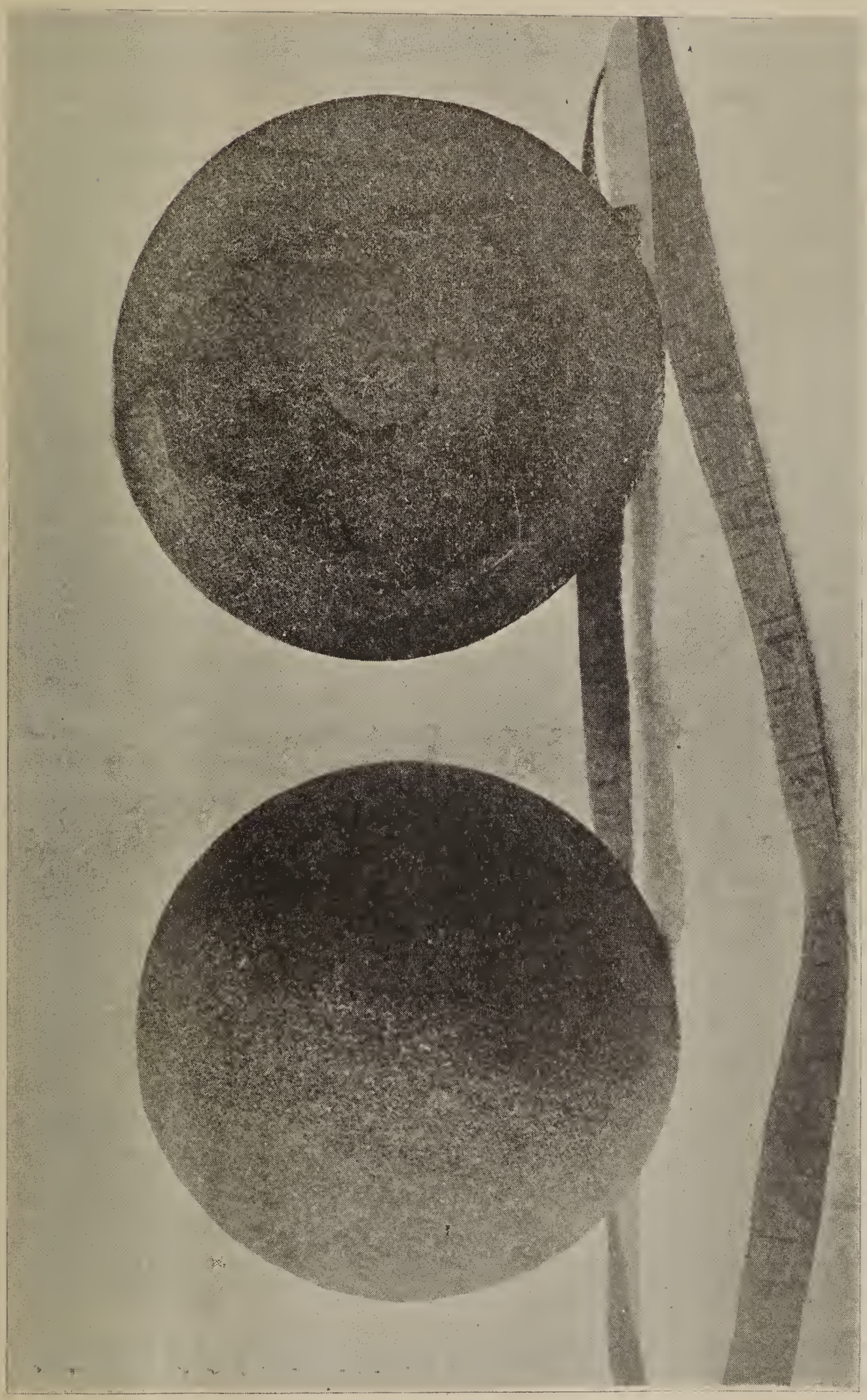
An Unusual Phyto-Bezoar.*

By *William Trelease.*

In January, 1897, Dr. Francis Eschauzier, of San Luis Potosi, Mexico, sent to me two specimens (See p. 67), one a ball of surprising accuracy of surface, measuring a little over three and one-half inches in diameter and weighing seven and one-half ounces, and the other one-half of a similar ball, about four inches in diameter and weighing four ounces,—stating that sixteen such balls of about the size of the specimens sent had been taken from the stomach of a bull at the Hacienda de Cruzes, and adding that he believed them to be composed entirely of an agglomeration of the fibres of some cacti, an undigested portion of which formed the nucleus. Subsequent inquiry resulted in the additional information that the chief food of cattle at that season of the year consisted of five Opuntias, and that the animal from which the specimens were obtained was wild, of fighting stock, and consequently allowed to seek food where it could be found, instead of being fed upon cacti which had been roasted, as is the custom with other stock. My informant further stated that the wild bulls drink very little water while feeding upon cacti, and that the animal in question, which was ten years old, had not exhibited any signs of illness, though for some time the large size of its abdomen had attracted the attention of the vaqueros, but, owing to the intractability of the animal, no examination of it could be made until after its death.

The specimens, which were exhibited to the Academy Feb. 15, 1897, are of a brown color, and in appearance somewhat suggest felt or rubbed sole leather, and on examination prove to be composed, aside from the small nucleus at the center, of the barbed hairs with which the pulvini of the Platopuntias are armed. To the barbs with which these hairs are covered is due their power of felting together, and there is every indication that, starting about some small nucleus of vegetable fiber, they have been compacted into the dense, felty texture by the visceral movements of the animal, to which, causing friction against one another, their perfectly round form is attributable.

* From Transactions of the Academy of Science, St. Louis. Vol. 7, No 18.



Phyto-Bezoar and Section.

It is well known that the Opuntias produce spines and two kinds of trichomes. In some of the Cylindropuntias, each spine is invested by a deciduous sheath, which is downwardly barbed, so that a person or animal brushing carelessly against a plant is certain to remove some of the barbed sheaths. In the Platopuntias, to which the ordinary flat-stemmed prickly pears, and the species upon which the Mexican cattle are fed, belong, the spines, when present, are destitute of such a sheath, and protect the plant simply because of their rigidity and pungency. The spines originate in what have been called pulvini, which in this genus of cacti are coated with delicate, flexible hairs, divided by partitions into a number of cells and stiff, thick-walled hairs, several millimeters in length and from one to two tenths of a millimeter in diameter at the base. These are very lightly attached to the epidermis of the plant, so that when the pulvinus is touched they are certain to be removed in considerable numbers, the fine points of the stiffer one penetrating the skin and the barbs with which they are closely beset preventing their ready withdrawal.

Balls formed largely of the hair of animals are often found in the stomachs of ruminants, to which they have found their way when the animals have licked themselves, and not infrequently smaller balls, with a hard, glossy surface, are found in the stomachs of cattle, horses and, as Dr. Eschauzier informs me, of goats. In general, such a formation is spoken of as a bezoar, and all of the principal agricultural museums contain good specimens of them. One of the largest of the ordinary hair balls which has come to my notice is preserved in the museum of the Iowa Agricultural College, and is stated to weigh four pounds and eleven ounces and to measure twenty-five and one-half inches in circumference. The smaller, harder structures, which seem to be primarily of biliary composition about some sort of nucleus, rarely measure more than two inches in diameter, with a dry weight of one or two ounces.

In the human stomach, concretions comparable with bezoars have occasionally been observed. In 1894, Dr. W. B. Outten[1] recorded one of a conical shape which measured over five inches in length and about five inches in diameter in its broadest portion and weighed fourteen ounces, and was accompanied by another similar but somewhat smaller gastrolith weighing seven and eight-tenths

[1] A Case of Double Gastrolith Removed by Gastrotomy. * * * The Medical Fortnightly. St. Louis, August 15, 1894.

ounces. These masses appeared to have formed about a quantity of vegetable connective tissue, intermingled with starch, etc., and subsequently increased by the same materials, yeast cells, etc.; and it is stated that the nucleus was formed through the patient having gorged himself with bread and persimmons, the fiber of which bound together the starchy matter.

The only structures of which I have found record which are closely comparable with the specimens sent by Dr. Eschauzier, are described by Mr. Coville,[2] who records the formation in the stomachs of horses of somewhat similar balls (in one case as many as thirty of which were found in the stomach of a single animal), which are also occasionally found in the large intestine. These balls are described as uniform in all respects save size, being almost exactly spherical, of yellowish-brown color, with a smooth, even surface and, on removal, saturated with the intestinal juices. On drying, they shrank but little and varied in diameter from three to four and one-half inches, and were of a dull brown color, having the appearance of a fine quality of felt. In texture they were so firm that the surface could not be indented with the thumb, yet the weight is said to have been unexpectedly light, as one about four inches in diameter weighed only four and three-fourths ounces. When cut open, these balls were found to be solid and to consist of a uniform felt-like material throughout, showing faint concentric layers of slightly different color; and a microscopical examination demonstrated that they were composed of minute, rather stiff hairs, seldom more than one-tenth of an inch in length, pointed at one end and covered with fine barbules directed toward the pointed apex, which usually faced the surface of the ball. Further investigation showed that these hairs were derived from the calix of the crimson clover, the assumption being that the horses had fed upon over-ripe plants of this species (*Trifolium incarnatum*), the hairs which accumulated in the stomach being aggregated into spherical felted balls in the manner assumed for the above-described Mexican specimens composed of Opuntia hairs.

In discussing the use of oat bran as a food for domestic animals, especially horses and donkeys, Dr. Harz[3] characterizes it as a dangerous food material, because it favors the formation of large bezoars,

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[2] Coville: Crimson Clover Hair Balls. Circular No. 8, U. S. Dept. of Agriculture, Div. of Botany, June 15, 1896.

[3] Landwirtschaftliche Samenkunde, II. 1315.

which he had previously discussed in an extensive paper,[4] in which is given a classification of structures of this kind, with a very considerable citation of earlier literature.

It is a frequent practice in Texas to cut the branches of cacti which are fed to stock into half-inch lengths. In this way, every one of the obliquely set longer spines of *Opuntia Engelmanni* (and of some other species which are so used) is almost certain to be cut off, so that the danger from the spines is removed. This treatment, however, does not destroy the barbed hairs of the pulvini, of which the bezoars under consideration are composed. It is also the practice, in some places, to roast the fragments as a means of completely removing the spines and barbed hairs, but this is objected to by some feeders, because the roasting has been asserted to add to the laxative properties of the cactus.[5] Where some such treatment has not been resorted to, injury to the animals not infrequently results; and in the bulletin referred to, Dr. Vasey gives a number of instances in which cattle have died from an accumulation of spines in the mouth and stomach, an effect somewhat comparable with that caused by the awns of *Hordeum* when cattle feed upon these.

Considering that in the West and Southwest of our own country, as well as in Mexico, Opuntias are not infrequently fed to cattle in considerable quantities, it is surprising that other cases similar to the one here recorded have not been reported, but to my knowledge they have not.

MONTHLY REVIEW.

Botany and Pharmacognosy.

The Structure of the Twigs of Fraxinus Americana L.—A transverse section through a twig of *Fraxinus Americana* of one year's growth shows three plainly marked regions. The cortical region on the outside, followed by the wood zone, and the pith at the center.

In most cases the cuticle and epidermis are still present, the cells of the latter being almost square in cross-section.

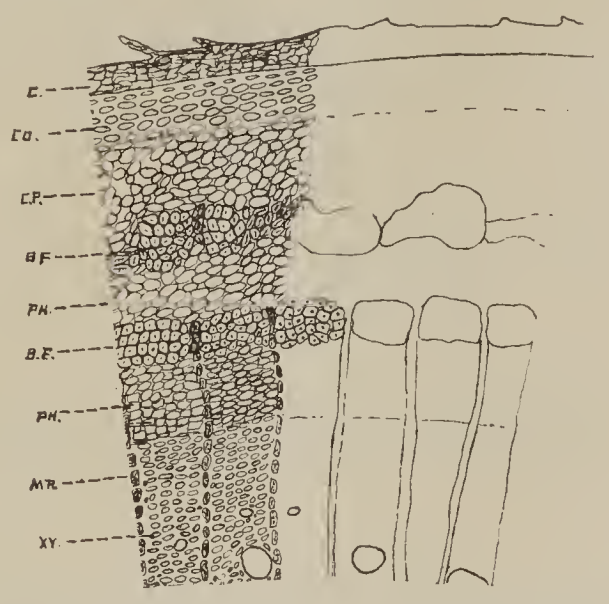
The cork cells are much compressed, with the exception of one or two rows next the epidermis. The cork tissue is separated from the collenchyma

[4] Beiträge zur Kenntniss der Pflanzenbezoare des Pferdes und Rindes. Deutsche Zeitschrift für Thiermedicin und vergleichende Pathologie, I. 393—407. 1875.

[5] Vasey: Grasses of the South. U. S. Dept. of Agriculture, Botanical Division, Bulletin No. 3, p. 52. 1887.

by the phellogen, made up of brick-shaped cells and filled in the fall with starch.

The outer rows of the cortical parenchyma region beneath the phellogen are composed of moderately thick-walled collenchyma, which fades into a more open tissue having many intercellular spaces. Toward the inner limit of this region are the groups of bast fibres. These are separated by sclerenchyma cells, thus forming a continuous band of sclerotic tissue running around the stem. Frequently for a limited number of seasons a zone of bast fibre bundles is laid down each year. (See Fig.) Adjacent interiorly to these bundles are a few rows of loose parenchyma followed by the phloem region. The sieve tubes of this region are of the usual form and have their sieve plates obliquely placed, the average distance between them being 0.103 mm.

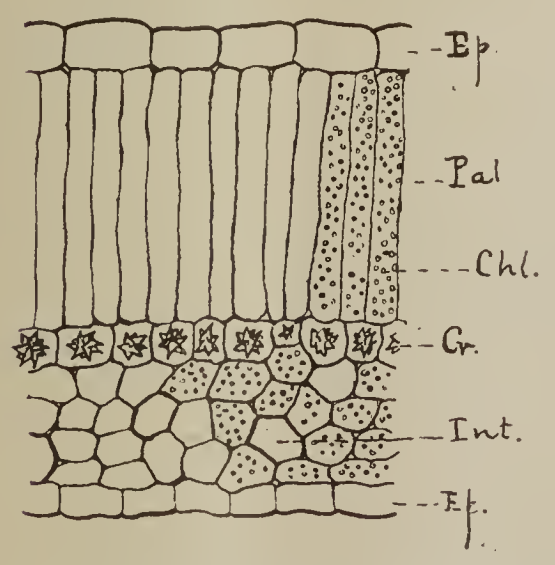


View of twig two years old, transverse section, showing bark structure and the late wood; magnified 50 diam.

The medullary rays run from the outer limits of the phloem tissue through the wood zone to the pith. Their cells are filled with starch at this season and a large prismatic crystal of calcium oxalate usually occurs in each cell.

In the wood zone, the wood fibres are found mostly toward the outside, while near the pith are the tracheæ.

The pith cells near the wood are thick-walled, pitted and filled with starch. The cells making up the central mass of the pith are larger, have thinner walls and no contents. [Pharm. Arch. 1, p. 6.] *R. H. Denniston.*

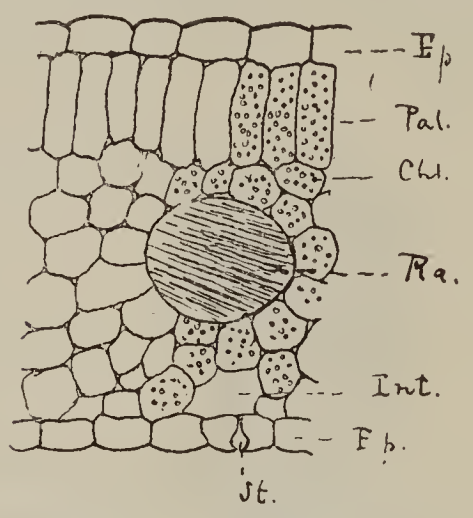


Transverse section of the leaf of *Datura Stramonium*. Cr. S.—Crystal sand of calcium oxalate.

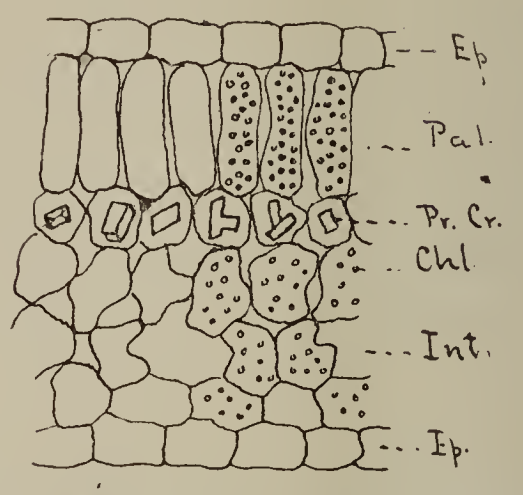
Comparative Structure of the Leaves of Datura Stramonium, Atropa Belladonna and Hyoscyamus niger.—In an article under the above title J. O. Schlotterbeck and A. Van Zwaluwenburg discuss these three related leaves to determine the most characteristic features for their identification.

The leaves are described in detail in external features as well as their minuter structure, and especial emphasis given to the peculiarities of each leaf. Variations of generally accepted characteristics are also noted; in the case of *A. Belladonna* in the

appearance of calcium oxalate in acicular crystals as well as in the form of crystal-sand, and cubical as well as stellate crystals in *D. Stramonium*. There is shown to be sufficient difference to easily distinguish between any two of these leaves, even when in moderately fine powder.



Transverse sections of the leaf of *Atropa Belladonna*. Ra.—Raphides of calcium oxalate.



Transverse section of the leaf of *Hyoscyamus niger*. Pr. Cr.—Prismatic crystals of calcium oxalate.

Resumé of Characteristics.

D. Stramonium.	*A. Belladonna.*	*Hyoscyamus niger.*
Leaf.—Smooth, sinuate, unequal at the base; with round perforations and prominent midrib underneath.	*Leaf.*—Broadly ovate, narrowed into a petiole, entire margin smooth.	*Leaf.*—Hirsute, deeply sinuous, clasping at the base.
Powder. — Elongated palisade-cells. Stellate crystals predominating, occasionally cubes. Thick-walled, warty hairs.	*Powder.*—Crystal-cells large, round and full of crystal sand or acicular crystals.	*Powder.*—Crystals prismatic, or in twin forms. Seldom, if ever, stellate.

[Pharm. Arch. 1, p. 1.] *J. O. S.*

Research into Grain Rust.—In a resumé, Jacob Erikson of Stockholm presents the principal results of research on grain rust. The work was done during a term of several years, the details of which have been published in a number of separate papers. The article relates many items of great interest not only from the purely scientific side, but from the applied, practical side, as well.

One of the most important conclusions presented pertains to the time of infection of the host plant and the relations of host and parasite from that time until the latter makes its appearance as a disease at the surface of the host. The older theory concerning the infection of the various cereals by fungi which produce the "rusts" assumes the infection taking place always in the growing plant and often well on toward the time of harvest. According to Dr. Erikson this may be so, but in very many cases the parasite is present in the young host plant from the beginning. In such cases it was inherited from the parent host plant and may remain for a longer or shorter period in a latent symbiotic condition, sooner or later to take on an actual condition and produce disease.

[Bot. Gazette, 25, p. 26.] *L. S. Cheney.*

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Reviews.

PHARMACOPŒIA OF THE AMERICAN INSTITUTE OF HOMŒOPATHY. Published for the Committee on Pharmacopœia of the American Institute of Homœopathy. Otis Clapp and Son, Boston. One volume, pp. 676. Price: cloth, $4.25; morocco, $5.00.

As long ago as 1868, the American Institute of Homœopathy appointed a committee to prepare a dispensatory which should embrace pharmacy, but for various reasons this work, though nearly completed, was never published. In 1882 the first edition of the American Homœopathic Pharmacopœia was published by Boericke and Tafel. This work, which has since undergone three revisions, was entirely a private enterprise and was not officially recognized by any organized body of homœopathists. It, and various European homœopathic pharmacopœias have served as guides to homœopathists in this country up to the present time. Recognizing the importance of uniformity among homœopathic physicians and pharmacists, the American Institute of Homœopathy in 1888 appointed another committee, composed of twelve members, six of whom were to be pharmacists, to begin work on a pharmacopœia which was to have the authoritative sanction of the Institute. The results of the labors of this committee are embodied in the work before us.

Although the original instructions of the Institute were to make the work international in character, if possible, and a special committee was appointed to confer with the Commission on International Pharm. of the World's Hom. Convention, this attempt at international agreement was a failure. Another instruction, to use the British Hom. Pharm. as a basis, was only partly followed; i. e., the committee adopted a few of the features from this work, but on the whole the new pharmacopœia differs greatly from the British authority and is in most respects superior to it.

The Hom. Pharm. of the Am. Inst. of Hom. is divided into three parts: I, General Pharmacy of Drugs for Homœopathic Use; II, Special Pharmaceutics; III, Select Tables for Reference.

Upon looking over Part I, we are at once struck by several radical changes from other homœopathic pharmacopœias, changes that have been introduced with the aim of making the methods accord with our modern chemical and physical views. Thus in the making of triturations, the fact is recognized that there is a great difference in the ease with which substances can be reduced to powder

by triturating, and also a limit to the fineness of powders so obtainable. The old method of Hahnemann of uniform amount of trituration of all substances is therefore abandoned, and microscopical tests applied to determine the end of the operation. There is also dropped the long-established custom of making dilutions from the 3d centesimal triturations, an operation that was based on the assumption that all substances are soluble in 10^8 parts of dilute alcohol. One of the most important features of the new work to homœopathic practitioners is the fact that it purposes to establish uniformity in the strength of preparations, the lack of which, especially in the case of tinctures, was greatly apparent. Heretofore, "mother tinctures," as prepared in this country, might vary greatly according to the method employed in making them (in some cases even they might be 10 times as strong when prepared by one method as by another). The new pharmacopœia has adopted the British method of preparing these tinctures, making the tincture in all cases represent 10 p. c. of the dry crude drug. This of course necessitates the determination of moisture in case of fresh plants or animals. The use of the metric system in all preparations, and the adoption of the methods of maceration and percolation in the making of tinctures are other features worthy of mention. The kinds of preparations recognized are tinctures, dilutions, triturations and medications, the forms of vehicles being powders, pellets or globules, tablets, cones, etc.

Part II treats of the materia medica of homœopathy. The number of drugs of animal origin in this list is smaller than in most homœopathic pharmacopœias (being 32 as compared with 54 mentioned in the Am. Hom. Pharmacopœia, 1890), and an attempt is noticeable to weed out all uncertain or little-known substances, or such as have not been thoroughly "proved," though a few uncertain substances, such as "Hahnemann's Causticum," have been retained. In case of vegetable or animal drugs, there are given under each head: the official Latin and English names, the natural order, synonyms, description, habitat, a brief history, the part used, and official preparations. With therapeutically very active drugs, the maximum dose is also included. In the case of chemical substances we find mentioned: the official names, synonyms, chemical formula, description, and the official preparations of the drug. In the matter of chemical names we find a rather peculiar system employed. The

old Latin titles have been adopted; these are followed by the modern English chemical name and also by a third title, which retains the Latin basic name and adds the English name of the acid, e. g., Kali carbonate, ferrum phosphate, etc. That this attempt to simplify chemical nomenclature will have rather the reverse effect can scarcely be doubted. The entire omission of assay processes for drugs and tests for purity and strength of chemicals is hardly excusable in a work of this kind. Part of the space given up to unnecessarily long descriptions might easily have been utilized for this purpose without greatly increasing the size of the volume.

Part III is taken up with tables of reference, including a table of abbreviations used in prescription writing, a table of atomic weights, and tables of equivalents of weights and measures of the U. S. apoth. and metric Systems. These latter tables have been taken from the U. S. Ph. by permission of the Com. of Revision. A list of Latin names of drugs and their pronunciation and a general index complete the work.

The publication of this pharmacopœia should be hailed with joy by homœopathic physicians and pharmacists of America, since it furnishes them with an authoritative guide to follow in the prescribing and manufacture of homœopathic pharmaceuticals, and its general adoption will lead to uniformity in the strength of preparations. Since the manufacture of homœopathic preparations, by the very nature of the methods involved, will probably always remain in the hands of a few, the work will be of less importance to the general pharmacist. Nevertheless the desire alone of knowing as much as possible of pharmacy in all its phases should lead pharmacists, especially those who deal in homœopathic medicines, to secure a copy of the book.

Richard Fischer.

ANALYSE DER FETTE UND WACHSARTEN. Von Dr. Rudolf Benedikt, weil. Professor d. k. k. technischen Hochschule in Wien. Dritte erweiterte Auflage herausgegeben von Ferdinand Ulzer, Professor am k. k. Technischen Gewerbe-Museum in Wien. Ein Bd., pp. XVII, 659, mit dem Bildniss Benedikt's in Photogravure und 48 Textfiguren. Verlag von Julius Springer, Berlin. 1897. M. 12.00.

Since the appearance of the first edition of this work in 1886, it has been quoted so generally in analytical treatises and in innumer-

able minor scientific contributions that it has well nigh become a *sine qua non* to the chemical analyst. It has become almost equally important to the chemical teacher and to the student who desires to work in this branch of analytical chemistry. The chemical world, therefore, has sufficient reason to regret that the author could not complete the revision of the third edition which he had just begun before death put a check on his active and efficient career as an investigator, teacher and author. It is very becoming, therefore, to see the third edition prefaced by a biographical sketch and portrait of the author.

The publisher, however, seems to have been fortunate in the selection of a revisor in the person of Professor Ulzer. Without disturbing the general character of the work, it has been brought up to date and, what is equally important, references to the original articles have been inserted freely so as to make a study of the original literature possible. To those who are acquainted with the earlier editions of this book, an introduction to the contents of the third edition is unnecessary. To those, however, who have thus far not become acquainted with this treatise, a brief statement of its contents may be welcome. Part I discusses briefly the constituents of fats and waxes, the acids and alcohols; Part II treats of the physical and chemical properties of the fats and waxes; Part III takes up the determination of the non-fatty admixtures and the preparation of the substance for analysis; Part IV discusses the methods for the determination of the physical properties of the fats; Part V the elementary analysis of fats; Part VI the qualitative scientific examination of a fat of known source; Part VII the general methods for the quantitative determination of fats and mixtures of fats; Part VIII takes up the quantitative determination of foreign admixtures which are dissolved in the fat or melted together with it; Part IX takes up the examination of materials and products of the fat industry; Part X the examination of liquid fats; Part XI that of solid fats and waxes; Part XII contains a description of individual fats and waxes; Part XIII concludes with an illustration of how the methods described in the book can be employed in the examination of technical products.

The third edition, like the ones that have preceded it, will prove a valuable guide to all who have occasion to consult a treatise on the subject of fats and waxes. The name of the firm is suffiicient

guaranty for the excellence of the press-work and illustrations. The book is bound in cloth and, therefore, is in shape to be used without first having to be bound. *E. K.*

DIE MIKROORGANISMEN DER GÄHRUNGSINDUSTRIE. Von Alfred Jörgensen, Direktor des gährungsphysiologischen Laboratoriums, Kopenhagen. Vierte, neubearbeitete und vermehrte Auflage. Mit 79 Textabbildungen. Berlin. Paul Parey. 1898.

The recent appearance of the fourth edition of the above work indicates that the interest in micro-biology is steadily increasing. Hitherto the medical aspects of the subject have been uppermost in the minds of most students, but due attention is now being given to other applied lines. Brewing especially is now placed on a scientific foundation. With the introduction of pure yeast cultures, the empirical methods that had ruled so long were relegated to a minor position and to-day brewing is a science that is based on modern biological methods.

Jörgensen has done much to further the development of this idea both in his brewing course at Copenhagen and in his popular work that is recognized as a standard text on the subject.

Inasmuch as the yeasts are of the greatest importance in the brewing industry, particular attention is paid this subject both from the systematic as well as the physiological standpoint. The predominating importance of the *Saccharomycetes*, however, does not lead him to ignore other branches of micro-biology and one finds ample reference to the bacteria, more especially those groups that are the cause of various fermentations in different fermented liquors.

The book on the whole follows the general lines already presented in former editions, but in this latest form each chapter has been thoroughly revised and expanded. *H. L. Russell.*

ANLEITUNG ZUR QUANTITATIVEN BESTIMMUNG DER ATOMGRUPPEN. Von Dr. Hans Meyer, Assistent für analytische Chemie an der k. k. Technischen Hochschule in Wien. Ein Bd., pp. VIII, 115, mit in den Text gedruckten Abbildungen. Verlag von Julius Springer, Berlin. 1897.

In inorganic chemistry the determination of the ions constitutes almost exclusively the present method of quantitative analysis because it is in harmony with the present status of our knowledge of that branch of chemical science. In organic chemistry the generally

employed elementary analysis has to be supplemented because the quantitative determination of the elements reveals but little as to the nature of the substance in question.

In order to determine the structure of a molecule, after its size and elementary composition have been ascertained, various group reagents have been universally employed. The aims of synthetic chemistry, which were principally involved, were satisfied in large measure by qualitative determinations. If quantitative determinations were demanded they were largely carried out in an indirect manner by substitution and a second elementary analysis.

Whereas general chemistry was on the whole content with such methods, applied chemistry demanded methods that would give quicker though possibly at times less reliable results. As a consequence acid figures, saponification figures, iodine figures etc. were determined for fats, resins etc. The too general application of these methods without a careful study of individual peculiarities naturally led to unreliable results, and being employed at times in a rule of thumb fashion brought more or less discredit upon the entire scheme of analysis.

Yet there is much of value in some of these methods that demands more scientific study and more discrimination than they have received heretofore. The author has, therefore, collected the various methods that have been employed successfully and has classified them in such a manner as to make the compilation exceedingly useful. Quantitive methods for the determination of hydroxyl, carboxyl, methoxy, ethoxy, methimide, etc. groups are described and their relative pratical value discussed. The book will, therefore, prove of great value to chemists working in any department of organic analysis. This book constitutes without doubt the beginning of a more general application of rational scientific methods to the problems of organic analysis. As such it cannot fail to accomplish its mission.

E. K.

DIE WISSENSCHAFTLICHEN GRUNDLAGEN DER ANALYTISCHEN CHEMIE, elementar dargestellt von W. Ostwald. Zweite Auflage. Ein Bd., pp. x, 200. Verlag von Wilhelm Engelmann in Leipzig. 1897. M. 5.00; geb. M. 5.80.

Analytical chemistry, or rather chemical analysis, like many other departments of applied science has been largely satisfied with utilizing,

without the responsibility of giving in return. There have always been notable exceptions and chemistry could not be what it is to-day without the assistance of analytical chemistry, but the general tendency has been to take rather than to give. In consequence of this tendency, analytical chemistry like chemical mineralogy has been content with theories, and with systems of nomenclature based on these theories, that were discarded by chemistry in almost all of its branches years and years ago. The very fact that it is the art of chemical analysis rather than the science of analytical chemistry with which most analysts occupy themselves almost exclusively seems to be a sufficient explanation of the condition of affairs above indicated.

For this condition of affairs analytical chemists and writers of text books on analytical chemistry are by no means alone to blame. Teachers of chemistry, from the high-school up, are rather generally inclined to lay too much stress on ideal chemical equations thus placing upon a slightly complex phenomenon an hypothetically simple interpretation. This appeals to the student and he acquires the notion that the writing of chemical equations is chemistry. Fortunately chemical teachers have begun to realize this danger and are endeavoring to counteract this erroneous belief. This applies with special force to America where the general tendency of boards of education has largely tended toward the practical.

According to the author's own statement very little improvement has become apparent if we look into treatises on analytical chemistry that have been published since the first edition of this little work appeared. He sees hope for improvement, however, in the interest which has been revealed by chemists and analysts. As already indicated, it is from this side, from the teaching chemists, that the first improvement must come. The chemical student must acquire a different notion of chemical action than has generally been imparted to him before he specializes in analytical chemistry. If his foundation is a good one, the superstructure will turn out all right even if the literary tools are not of the very best and in harmony with the most advanced ideas of chemical science.

The new edition has not undergone any radical changes. The temptation to work out the second part in greater detail has again been resisted in order not to interfere with the principal object of the book. This, however, did not prevent a careful reconstruction, wherever necessary, of the text of the first edition. Additions were also

made, notably a lengthy paragraph on electrochemical analysis. Though the modern theory of solutions with its ions upon which this treatise is based has been attacked repeatedly of late, chemical students of all grades will find this little book exceedingly instructive.

E. K.

APOTHEKERKALENDER FUER DAS DEUTSCHE REICH, begründet von Oscar Schlickum. 1898. Mit Anhang: Die Apotheken der Schweiz und Luxemburgs, sowie einer offiziellen Zusammenstellung sämtlicher Personal-Verhältnisse des Deutschen Apotheker-Vereins. Herausgegeben von Dr. Franz Luedke, Corps-Stabsapotheker IX. Armeecorps. Sechzehnter Jahrgang. Ein Bd., pp. 375, mit dem Bildniss von Professor Dr. H. Beckurts. Verlag von Strecker & Moser, Stuttgart.

The above reveals in no small part the contents of this annual. In addition it contains the usual information found in similar diaries in the form of tables, lists etc. that make these small pocket volumes so convenient for ready reference in the laboratory and behind the prescription counter. It also contains, as might be expected, a calendar with sufficient blank space for memoranda, information with regard to postal, express and telegram rates etc. The special feature of this years volume is a portrait and biographical sketch of Prof. Beckurts, well known as editor of the Jahresbericht, the German yearbook or Report on the progress of pharmacy as we would style it in this country, and co-editor with Prof. Schmidt of the Archiv f. Pharmacie.

E. K.

A TEXT-BOOK OF PRACTICAL THERAPEUTICS, with especial reference to the application of remedial measures to disease and their employment upon a rational basis. By Dr. Hobart Amory Hare, Professor of Therapeutics and Materia Medica in the Jefferson Medical College, Philadelphia. With special chapters by Drs. George E. de Schweinitz, Edward Martin and Barton C. Hirst. Sixth edition, thoroughly revised and largely rewritten. One vol., pp. 756. Lea Brothers & Co., Philadelphia. 1897. Cloth, $3.75; leather, $4.75.

Whereas a scientific treatise should be largely objective in character, this quality need not exclude a certain individuality of the writer. Given two works that are equally accurate as to the subject

matter they contain it is the one that reflects the individuality of the writer which will find more favor with the student or reader. It makes a favorable impression if the writer comes out boldly with his views though they may not be in accord with popular opinion; or if he calls attention to existing evils that tend to thwart the best efforts of medical practitioners. Such being the case it is not surprising that Hare's Practical Therapeutics should have passed through six editions in seven years.

According to modern classification of the sciences and the specialization of human effort, therapeutics is distinctly a medical, not a pharmaceutical science. It is most frequently regarded as applied pharmacology, which may rationally be regarded as a boarder science between medicine and pharmacy. It is as important for the pharmacist to know about the therapeutic properties of the remedial agents which he prepares, as it is for the physician to possess a general knowledge of how these agents are prepared, though he need not acquire the skill to prepare them himself. It is not only absolutely necessary to know something about the physiological effect of the drugs that he dispenses in order that he may act as an intelligent check upon the physician, but a more exact knowledge on the pharmacist's part of these properties would materially though indirectly aid the physician, because the pharmacist who possesses this knowledge is apt to be more conscientious in the performance of his duties. The words of the author that "a poor drug to the physician is worse than a rusty knife to the surgeon; for the injury in the one case is unknown, whilst in the other it can be carefully watched and guarded" certainly appeal more strongly to the intelligent pharmacist who recognizes the responsibility of his position.

The author prides himself in being a student of the "only universally used branch of medicine" and points out that surgery, which boasts of its great progress during the last two generations, could not be what it is to-day if therapy had not provided it with ether and cocaïne, and with a host of antiseptics. The pharmacist—for the pharmaceutical chemist and manufacturer belong to the household of pharmacy—may share in this feeling, for it is he who had to prepare or isolate these substances before their therapeutic properties could be discovered.

A more intimate relationship between pharmacist and physician would be of the greatest benefit not only to both callings, but to

the public at large. Such relationship will be possible only by a better understanding of each other. One way to such understanding is through a better knowledge of the needs of the other and of service based on such knowledge.

Though the work before us is primarily designed for the medical student and practitioner, it will nevertheless prove equally valuable to the pharmaceutical student and practitioner. Aside from the general good that might result from the perusal and study of the work, the pharmacist will find much useful information that he can apply daily in his practice. The table of doses, the chapter on the administration of drugs, that on incompatibilities, etc., these are only a few of the minor chapters that will appeal to many more forcibly than most of the others of equal and possibly greater importance to him. The bookwork is of the standard excellency which we are accustomed to expect from this well-known firm of medical and pharmaceutical publishers. *E. K.*

DIE HAUPTSACHEN DER CHEMIE. Fuer das Beduerfnis des Mediziners sowie als Leitfaden fuer den Unterricht zusammengestellt von Erich Harnack, o. ö. Professor der Pharmakologie und medizin. Chemie an der Universitaet Halle. Zweite, neu bearbeitete Auflage. Ein Bd., pp. 156. Verlag von Leopold Voss, Hamburg. 1887. M. 2.50.

Students of educational institutions in which the members of the faculty do not come in daily contact with their students and in which, therefore, much stress is necessarily laid upon examinations are consequently in need of compact reviews which can be read shortly before the examination. This applies also to students who intend to take state board examinations. The essentials of chemistry before us intend to supply such a demand for medical students, and apparently supply it well.

These essentials can be taught as well with the aid of material of special interest in the medical sciences as with the aid of material that appeals more to the student of dye-stuffs. Yet the latter often receive more time and attention in the lectures of the German professors than the former. The German medical student is fortunate in having treatises of this kind rather than miserable quiz-compends with the aid of which he can prepare himself for examinations.

E. K.

Pharmaceutical Review.

VOLUME 16. **MARCH, 1898.** NUMBER 3.

The Lloyd Library.

The story has been told of a librarian in conservative Scotland that he found it a very easy matter to make room for new scientific treatises on the shelves of his library. He simply advised his assistants to carry every book that was ten years old into the basement, for he considered it practically useless. We fear that the story concerning the advice of the Scotch librarian may have undergone more or less modification before it reached the old Northwest. Nevertheless, it is more or less characteristic of the times. The growth of the natural sciences has been so rapid during the past century; scientific students have been so absorbed in trying to keep abreast of the times, that they have become strangers to periods of their respective sciences not more than a generation or two old. In more ways than one this condition is unfortunate.

Since the establishment of Liebig's small public laboratory at Giessen, university has rivalled with university in the erection of magnificent chemical buildings. Only a few months ago Havemeyer Hall, the erection and equipment of which cost about three-quarters of a million of dollars, was thrown open to the public. Possibly there are not more than two or three chemical libraries in this country that could not be purchased by one percent of this sum. It seems to have been a comparatively easy matter to secure money for magnificent science buildings and for their equipment. Everything seems to point to the future rather than to the past. Expensive pieces of apparatus are especially supplied, possibly all the current journals are subscribed for, even sets of more important ones are on the shelves for reference. The thought that we can fully understand

the present, only if we have mastered the past, does not seem to have sufficiently taken root in the scientific mind. This thought is just beginning to dawn upon us, and courses on the history of the various sciences are being more generally offered. With their advent the need is felt of securing facilities for historic study and research.

All of the natural sciences have a very interesting history, and pharmacy, both as science and art, makes no exception. The direct relation it bears to mankind makes its history if possible even more interesting than that of the general sciences. Nevertheless the history of pharmacy has been even more neglected by pharmaceutical professors at both university and college than that of the other sciences by our colleagues.

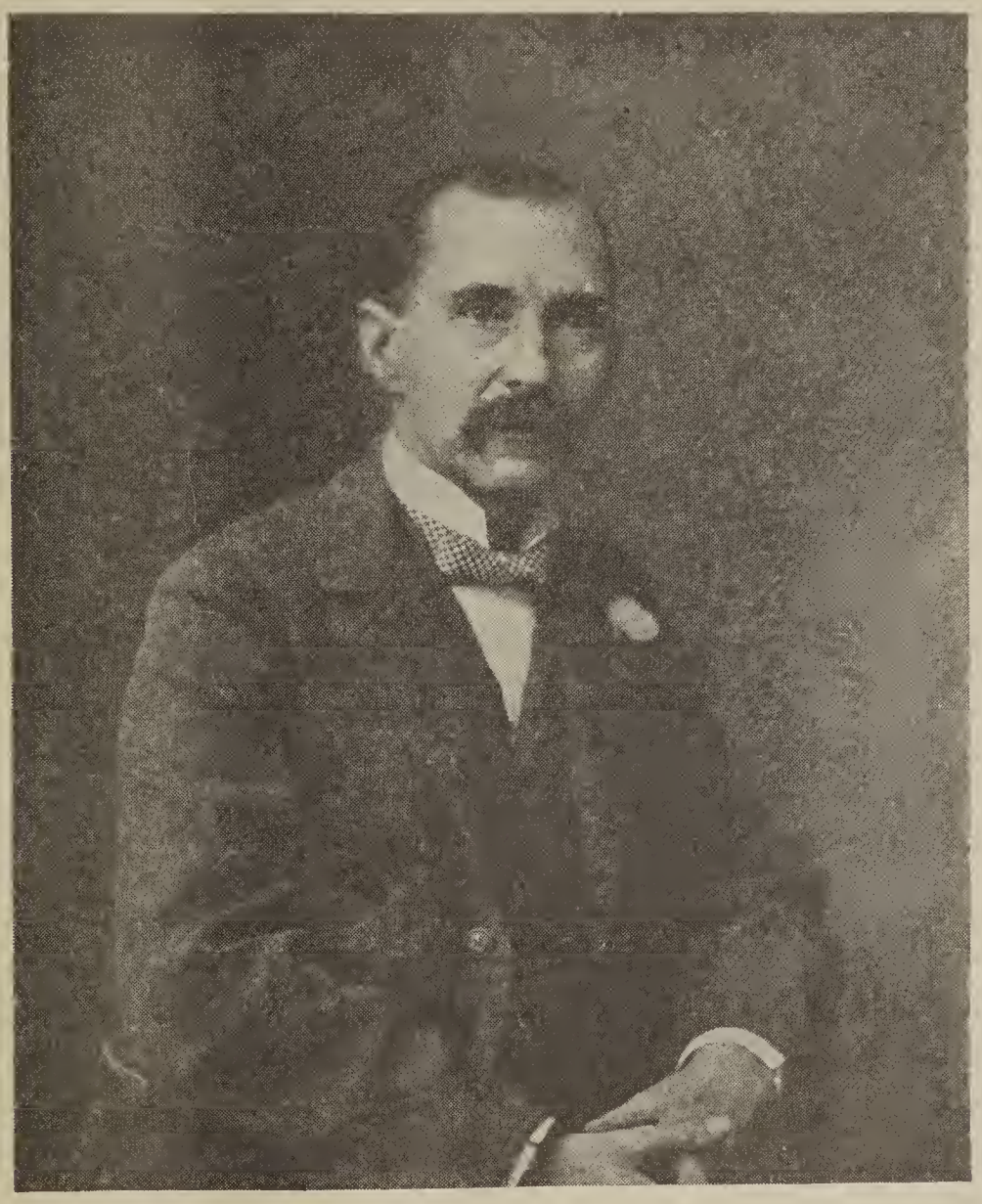
In European countries whose history covers century upon century, comparatively little has been done. It is true, individual efforts have been made that deserve much praise, such as the Reber collection in Geneva. The pharmaceutical exhibition at Prague in 1896 revealed that rare treasures are stored away in monasteries and private collections. Germany alone has a pharmaceutical collection in her national museum at Nürnberg that represents national effort though largely brought about by the energy of one or two individuals. The historic pharmacy constitutes one of the most interesting sections of this great museum, interesting not only to the pharmacist, but to the student of history and the intelligent laity as well. If it were not for a pharmaceutical practitioner in Nürnberg who in every way furthered the interests of this collection, it is extremely doubtful whether anything of the kind would exist to-day. With this collection is connected a large pharmaceutical library.

In this country we also owe the first attempt of any significance to build up an historic collection of pharmaceutical literature to two men whose career took root in the drug-stores of the old Northwest and whose time to-day is in no small measure taken up by the management of a pharmaceutical factory and a wholesale drug-house. That the writer refers to the Lloyd brothers is almost needless to state.

The history of the Lloyd Library, which has become favorably known in recent years not only throughout the United States, but also in Europe, is not only interesting in itself, but shows in a most striking manner what love for scientific pharmacy and a determination to do a thing well can accomplish.

In order to fully understand the inception and growth of this library, it is necessary to know something about the life history of its founders.

John Uri Lloyd, the elder brother, who requires no introduction to any pharmaceutical audience, was born in 1849 in West Bloomfield, N. Y. Four years later his parents moved to Boone Co., Ky.,



John Uri Lloyd.

and at fifteen John Uri went to Cincinnati, where he entered the pharmacy of W. J. M. Gordon as apprentice. Seven years later he became manager of the factory of H. M. Merrell & Co. in Cincinnati. After six years, when twenty-eight years old, he entered the firm as partner. In 1881 his brother Ashley took the place of Mr. Merrell. The firm at the same time became known as Thorpe & Lloyd Bros., Mr. Abner Thorpe having previously been a silent member of the

firm. In 1885 C. G. Lloyd took the place of Mr. Thorpe and since then the firm is well known as Lloyd Brothers.

Inasmuch as the scientific work of both brothers was accomplished during odd hours of their life as business men, and since it was their success as business men that enabled them to lay the foundation of their library, it seemed desirable to make the above brief statement as to their business career.

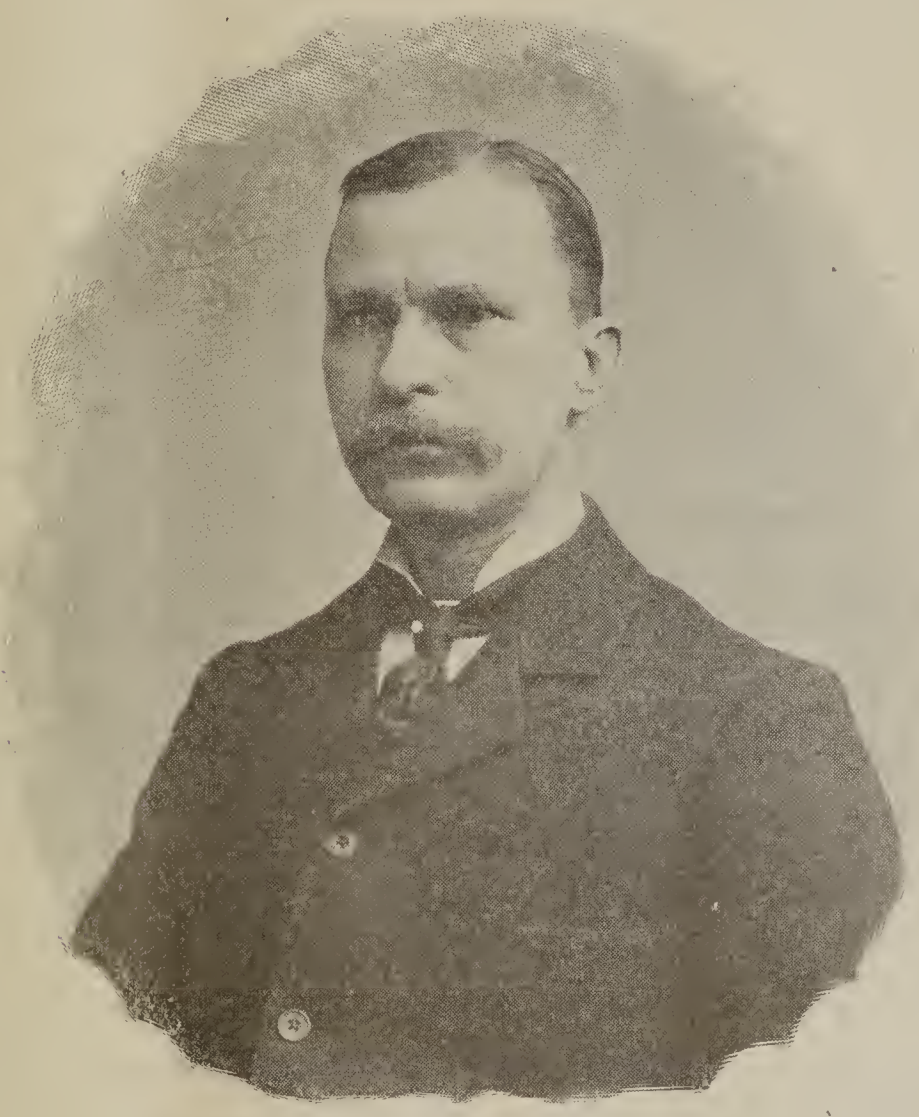
As a boy, John Uri manifested a decided inclination for the study of chemistry. This, no doubt, influenced him to enter the pharmacy of Mr. Gordon on the corner of 8th St. and Central Ave., in 1864. Here his indomitable zeal seems to have found no small amount of time for study and experimentation. The textbooks then purchased formed the nucleus of his later library. In 1864 he made the acquaintance and soon gained the close friendship of Dr. John King, that remarkable pioneer of American Eclectic Medicine. Dr. King not only encouraged him in his studies, but also directed his particular attention to the study of the large, untraversed field of American materia medica. The study of this field became an imperative necessity when he took charge of the laboratory of H. M. Merrell & Co. in 1871. This led to the purchase of books pertaining to vegetable remedies.

With his peculiar bent of mind, his studies early led him to independent investigation. The results of these investigations have been incorporated in papers and notes so numerous that the author himself has not been able to keep an account of them. As a result of this work—up to this time more than a hundred papers have appeared in the Eclectic Medical Journal alone—he was elected Professor of Chemistry in the Eclectic Medical Institute of Cincinnati in 1878, which position he still holds. For several years, beginning with 1883, he also occupied the chair of pharmacy in the Cincinnati College of Pharmacy.

When in 1887 the American Pharmaceutical Association met in Cincinnati, he was elected its president, having been a member of the association since 1870. He is honorary or corresponding member of numerous societies. Besides the unfinished work on Drugs and medicines of North America, he is author of The chemistry of medicines, of a supplement to King's American dispensatory, etc. At present he is engaged in the Revision of Dr. King's standard work. As is well known, he has in recent years successfully

employed his pen in fiction as well as in scientific literature. In 1897 the Philadelphia College of Pharmacy conferred upon him the honorary degree of Ph. M., and in the same year the Ohio University honored him with the award of the degree Ph. D.

The younger brother, Curtis Gates Lloyd, is known to pharmacists best as co-editor of Drugs and medicines of North America. He was born in Florence, Kentucky, July 17th, 1859.



Curtis Gates Lloyd.

He attended a country school until he reached the age of fifteen. During each summer, after reaching the age of twelve, he served as a boy in his father's drug store in Crittenden, Ky. At the age of fifteen he took a place in the drug store of Reakirt, Hale & Co. In 1885, he became a member of the firm of Lloyd Brothers. At present he has charge of the books and finances, and manages the advertising department of the firm.

When a country boy, he commenced, without a teacher, the study of botany, continuing this work persistently during his spare hours.

Through exchanges he very largely increased his herbarium which now consists of over 30,000 numbers exclusive of duplicates. In making this collection he has systematically exchanged with botanical authorities the world over.

Recognizing the difficulty that attended the collection of the larger, especially the fleshy fungi and the consequent neglect in this department, he, several years ago, made fungi his specialty and since doing so has given that subject his deepest care. His mycological collection comprices 1500 jars of the larger fungi, all fleshy species being preserved in alcohol. For several years past he has issued photographs of fungi, which he issues as fascicles. He is constantly on the *qui vive* for anything in the line of his specialty. Not only has he made innumerable shorter trips, but his botanical tours have led him to other countries as well. One winter he spent in Jamaica, another in Mexico and a third in the Carribee Islands, (Barbadoes, Trinidad, etc.). At present he is on a several months', trip to Egypt, journeying up the river Nile. In connection with these trips he has collected several volumes of valuable photographs taken by himself.

At an early date he began to invest his savings in books on botany and after accumulating a fair working library, his enthusiasm in this direction led to the systematical collection of botanical publications at home and abroad. Most of his spare time is now devoted to botanical research and library work. Being a bachelor, somewhat reserved and rather indifferent toward the affairs that do not concern him, he is a devotee of his beloved science botany and a collector in the highest and best sense of the word.

These brief sketches are not given as an adequate biography of these two workers in pharmacy. Many things that properly belong in a biography must be omitted here. The biographic outline given is merely to serve for the better understanding of that part of their life work to which we desire to call special attention at present, viz. the Lloyd-Library.

It is of sufficient interest to recall the fact that the small collection of textbooks purchased by the two brothers while serving their apprenticeship in drugstores, constitutes the nucleus of the present handsome library. The older brother inclined toward chemistry, the younger toward botany, and as both are self-made men in their respective fields, they were largely dependent upon their books. The acquaintance of Dr. King and the older brother's position in the

laboratory of Merrell & Co., not only influenced their work in general, but also the line along which for a time their library was principally developed.

Pharmaceutical and botanical Americana were developed. Encouraged by the growth of their library in this direction, the two brothers in 1884 began to issue their well-known work Drugs and medicines of North America. However, after three years the publication of this quarterly was suspended, partly because their business affairs prevented the authors from devoting the necessary time to its publication, partly because they deemed the literature then at their command insufficient to make the publication so complete as to satisfy the authors in every respect.

The Lloyd Library.

It was then that a systematic effort was inaugurated to collect all available publications concerning American drugs, botanic, Eclectic and Thomsonian medicines, which necessitated a patient search for the scarce volumes of the pioneers of American materia medica and medicine. In order to better accomplish the general aims of the Library it was found advisable to divide the institution into two departments, one department, embracing pure botany, in charge of C. G. Lloyd, and another department, embracing medical botany, pharmacognosy, pharmacy and related branches, in charge of J. U. Lloyd and since 1894 in the custody of Prof. Lloyd's assistant, Dr. S. Waldbott. In the pharmaceutical department, systematic efforts were made to complete the files of all American pharmaceutical journals and other standard publications such as dispensatories, and indeed of all available works on American pharmacy, medical botany and materia medica.

Gradually, connected fields were intruded upon, and books and serials in other than the English language were acquired for the department. Under the supervision of the present librarian all works are being catalogued, and new works and serials procured in uniformity with the methods pursued in the botanical department.

The Lloyd Library, as it exists to-day, is by no means complete to the satisfaction of its founders, and is being constantly enlarged by the liberal acquisition of new books and serials. It now comprises approximately 4000 volumes and 1000 pamphlets in the pharmaceutical department, and about 5500 volumes and 3000 pamphlets in the botanical division.

In a general way the library can be classified in the following manner:

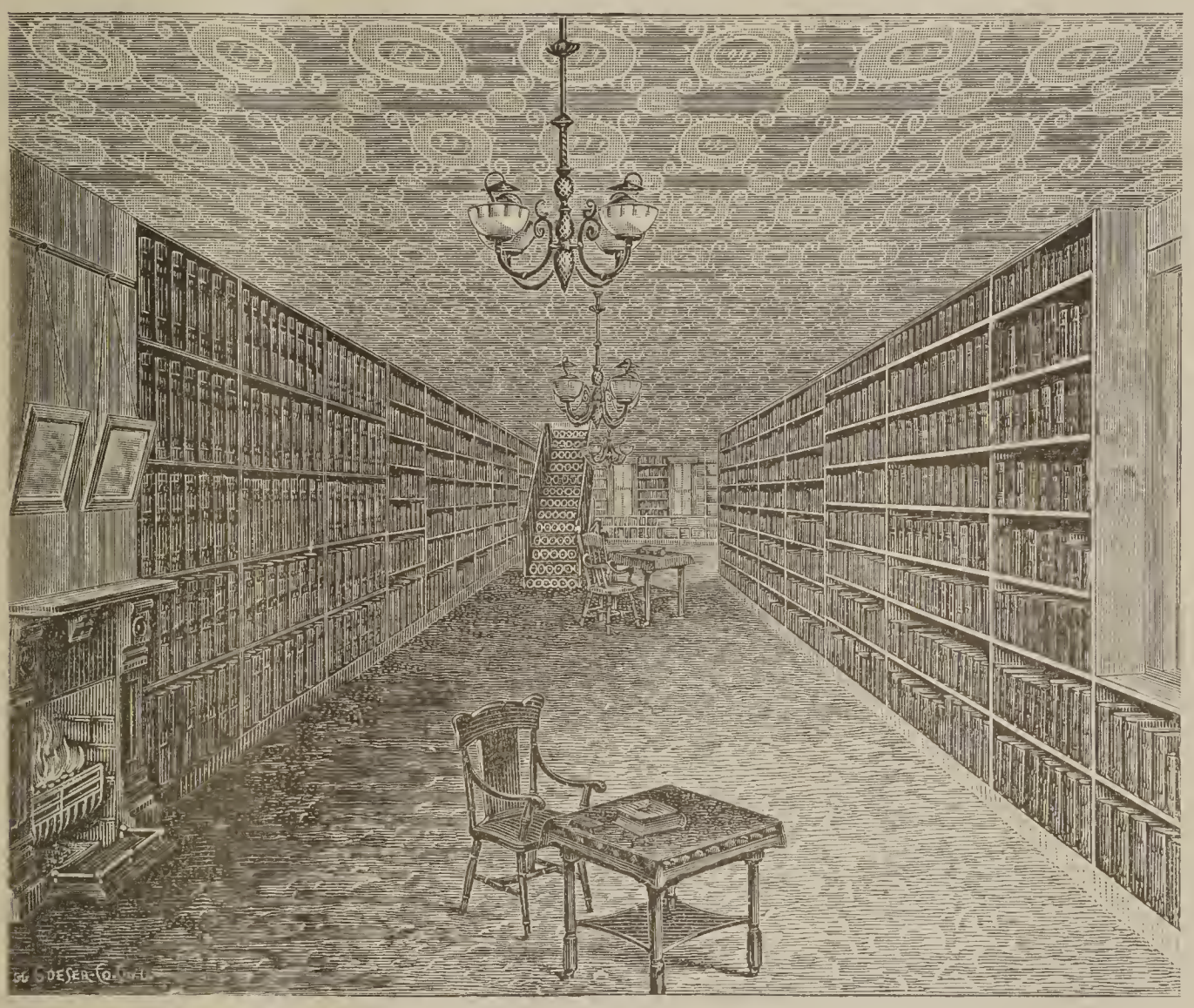
I. Botanical department, including the herbarium, mycological collection and special library on fungi.

II. Pharmaceutical department, comprising: 1. medical botany; 2. pharmacognosy, pharmacology and toxicology; 3. materia medica and pharmacy; 4. materia medica and therapeutics; 5. pharmacopœias; 6. dispensatories; 7. pharmaceutical practice; 8. pharmaceutical and general chemistry; 9. eclectic medicine (including serials); 10. Thomsonian practice of medicine; 11. domestic medicine; 12. history of medicine, pharmacy and chemistry; 13. biographies; 14. serials: pharmaceutical, chemical and medical; 15. miscellany, including occult works.

That a library of over 12,000 volumes and pamphlets with a large herbarium and a mycological collection require no small amount of space for their systematic arrangement and keeping is evident. These collections are at present housed in a special building at 224 West Court Street, which was purchased in 1891. Although at the time the building was purchased it was considered to afford ample accommodation for some time to come, it had to be enlarged in the spring of 1895. Not only was its area increased but a third story was added. Persons who desire to use the exceptional facilities of the library are accorded every possible privilege, and since 1896 the winter meetings of the Cincinnati Section of the American Chemical Society have been held in the rooms of the library building.

In recent years the institution known as the Lloyd-Library has become more generally known to pharmacists and botanists. But even at an earlier date it began to attract attention not only in

this country but also abroad. Professor Flückiger and others were struck by the even then remarkable literary resources of the authors of Drugs and medicines of North America. When on a visit in this country several years ago, Prof. Flückiger tried to persuade Prof. Lloyd to donate the library to some German university, because in his estimation it would prove most valuable at one of the great intellectual centers of Europe.



Interior View: Botanical Section.

The Lloyd library, however, is the product of American pluck and energy and fortunately for American pharmacy and botany is to remain in this country. Its founders have determined to donate or bequeath it intact to some educational institution where it may accomplish the greatest good. But even now this valuable collection, which in the almost pathetic words of Prof. Lloyd owes its existence to the fact that its founders where unable to obtain the systematic education enjoyed by other young men and were forced to make

books their teachers, is exerting its influence beyond the city limits of Cincinnati. Persons have come to Cincinnati to consult the library, books have been generously loaned to persons at a distance and information has been laboriously collected and gratuitously sent to persons making application.

Though incomplete, the Library has already been a benefit to many. Recognizing its value, contributions to it have been made by friends of pharmaceutical science and history, a book recording all donations being kept by the librarian. When complete it will not only be a collection unique in its kind, but also, to quote the words of Mr. C. G. Lloyd, "a collection such as we should like to have had at our disposal when we began our investigation of American medicinal plants." *E. K.*

Laboratory Notes.

By *Ferd. A. Sieker.*

IV. Castile Soap.

The U. S. P. of 1890 demands a "soap prepared from soda and olive oil," but gives no method by which the presence of fatty acids from oils other than olive oil can be determined.

The German pharmacopœia (3rd Edition) directs its *sapo medicatus* to be prepared from a mixture of equal parts of olive oil and lard.

The following are the main requirements of the U. S. P. of 1890 for soap:

I. "It should be "soluble in alcohol and water, more readily with the aid of heat."

II. "On placing a small weighed portion of soap with about 10 cc. of alcohol in a tared beaker containing sand, evaporating the resulting solution of soap to dryness and drying the residue at 110° C., the loss of weight should not exceed 36 p. c. (absence of an undue amount of water).

III. "A four-percent alcoholic solution of soap should not gelatinize on cooling (absence of animal fats).

IV. On dissolving 20 gm. of soap in alcohol, with the aid of heat, transferring the undissolved residue, if any, to a filter and washing

it thoroughly with boiling alcohol, it should after drying weigh not more than 0.6 gm. (limit of sodium carbonate, etc.) and at least 0.4 gm. of this residue should be soluble in water (limit of silica and other accidental impurities).

V. If a solution of 5 gm. of soap in 50 cc. of water be mixed with 3 cc. decinormal oxalic acid, V. S., the subsequent addition of a few drops of phenolphtalein, T. S., should produce no pink or red tint (limit of alkalinity).

The writer has had occasion to examine numerous samples of castile soap in the past four years, but has not found all of the tests given by the pharmacopœia as accurate or convenient.

Instead of determining the amount of water, the percentage of fatty acids insoluble in water was determined according to the method given in the Pharmaceutical Review 1898, p. 16. The samples were taken from the interior of the pieces of soap.

It is not probable that test III. (see above) is entirely reliable, for solutions of soap that contain only a small amount of animal fat will not gelatinize on cooling. Of the numerous samples examined only one sample was met with, the 4 percent alcoholic solution of which gelatinized on cooling.

The method of the U. S. Pharmacopœia (IV. above) for determining the sodium carbonate cannot be regarded as accurate, because it does not indicate in what state of hydration the washed sodium carbonate is, and other salts may be present that are insoluble in alcohol but soluble in water. The sodium carbonate could be more accurately determined by titrating the aqueous washings from the filter that contained the matter insoluble in alcohol, but this was regarded as too laborious and Dieterich's[1] method for determining the percentage of total alkali (NaOH and Na_2CO_3) was therefore employed. His method is as follows:

Dissolve 1 gm. of soap in 30 cc. of 96 p. c. alcohol, add 5 cc. of $\frac{N}{10}H_2SO_4$ and warm until no more carbonic acid is liberated, allow it to cool, add 2 drops of phenolphtalein T. S. and titrate with $\frac{N}{10}KOH$.

The silica and other insoluble impurities can be determined by bringing the titrated liquid on a tared filter, washing first with alcohol and then with water, drying and weighing. The silica (if any) introduced by the few cc. of $\frac{N}{10}KOH$ may be disregarded.

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[1] Helfenberger Annalen 1891, pp. 96 and 97.

The method of the U. S. P. (V. above) for determining the limit of alkalinity is unreliable and will not give concordant results in the hands of different persons, nor does it give the amount of alkalinity in the true sense of the word.

In the first place soap is decomposed by water, and secondly the warmer the solution the greater the alkalinity.[2] The German pharmacopœia directs the soap to be dissolved in alcohol, but does not state at what temperature the addition of phenolphtalein should cause no pink or red color. The method suggested by E. Dieterich was therefore employed, which is as follows: Dissolve 1 gm. of soap in 10 cc. of alcohol with the application of heat, cool to 50° C. and add 0.5 cc. $\frac{N}{10}$ HCl when the addition of 1 drop of phenolphtalein T. S. should cause no reddish color.

Some years ago Mr. S. R. Knox[3] reported on the results of the examination of eight samples of white castile soap of which only one sample was found to have been prepared from pure olive oil. He applied the elaidin test in determining the character of the fatty acids.

"Six gms. of fatty acid from soap were thoroughly shaken for 2 minutes with a mixture of 1.5 gm. nitric acid and 0.5 gm. of water and heated in a water bath. The oil should retain a light yellow color, not becoming orange or reddish-brown, and after standing at the ordinary temperature for 12 hours it should be a perfectly solid light yellowish mass."

It must be remembered in this connection that such fats as lard and suet cannot very well be revealed by the color of the resulting elaidin or elaidic acid. Furthermore, the congealing point of the fatty acids is higher than that of the respective oils and for this reason the solidification of the fatty acids on treatment with nitric acid might take place even if the oil was not perfectly pure.

The complete results of the examination of only 3 samples will be given in this paper, as of these only was the character of the fatty acids determined. In reference to the other samples that were examined, it is enough to state that most of them conformed to all of the pharmacopœial requirements.

A number of these were excessively alkaline. The four percent alcoholic solution of only one sample congealed on cooling. Such samples as possessed a rancid odor or were discolored were rejected

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[2] Compare Pharm. Review 1898, p. 16.
[3] Proceedings Am. Ph. Ass'n. 1894, p. 174.

without examination and for this reason the results here published do not indicate the average quality of soap as found in commerce, but the quality of a number of samples of good appearance, etc.

The percentage of unsaponified fat, if any, was not determined, although this is also of importance, because soap that contains unsaponified fat is prone to rancidity.

The character of the alkali was not determined.

Result of the examination of 3 samples. — Samples 1 and 2 represented pressed cake soap of American manufacture and 3 was an imported bar soap. Sample 2 was a green castile soap. All of the 3 soaps gave a good lather.

The iodin figure of olive oil runs from about 80 to 83, while the iodin figure of the fatty acids prepared from the oil is somewhat higher. The iodin figure of a sample of fatty acid that was prepared from a pure Malaga olive oil soft soap was found to be 84.35 and 85.6 (2 estimations). The melting point was 26½° C. (uncorr.) and the congealing point 23½ to 23° C. The iodin value of a Malaga olive oil from the same source as that used in preparing the soft soap was found to be 82.3. This indicates that olive oil or its fatty acids do not undergo oxidation in the process of saponification. The low iodin figures and the high melting and congealing points of the

No.	Na_2Co_3 and NaOH regarded as NaOH.	% of fatty acids (not anhydrides).	% of silica.	Behavior of 4% alcoholic solution on cooling.	Character of color if any.	Phenolphtalein after addition of 0.5 cc. $\frac{N}{10}$ HCl to alc. sol. of 1 gm. soap.	Iodin figure of fatty acids.	Metallic impurities.	Melting point of fatty acids (uncorrected).	Congealing pt. of fatty acids (uncorrected).
1	2.12 %	72.9	Not determined	Did not congeal	None	Red	75.1	None	28½° C.	24° C.
2	1.92 %	71.83	0.38	do.	Apparently chlorophyll no metallic colors	Red	73.5 and 74.14	None	32° C.	26½° C.
3	0.51 %	71.7	Not determined	do.	None	Not red or pinkish	76.6 77.03	None	28° C.	25° C.

fatty acids from the 3 samples of soap indicate that they were either prepared from olive oil that contained more palmatin and stearin[4] and possessed a lower iodin value, or some suet, lard or stearic acid was added, perhaps with the object of making a harder soap.

As already stated above, the German pharmacopœia directs equal parts of olive oil and lard for preparing its *sapo medicatus*, and although such an addition is not sanctioned by the U. S. P., it can not be regarded as an adulteration as long as the quality of the soap is not impaired or is improved by such an addition.

Laboratory of Lehn and Fink, New York.

Test for Hydrocyanic Acid in Mitchella Repens.

By *Richard Fischer.*

Mitchella repens L., commonly known as partridge-berry or squaw-vine, is a small evergreen, indigenous to North America, and growing in moist woods from Canada to the extreme southern limits of the United States. As to its medicinal virtues, little seems to have been established. The Indians employed it as a remedy in parturition, and it has been variously recommended as a diuretic, a tonic and an astringent; it is not official in the U. S. Pharmacopœia, but has found its way into the Eclectic materia medica and into several homœopathic pharmacopœias.

The plant was analyzed by E. Breneiser,* who reported it to contain resin, wax, glucose, mucilaginous matter, albumin, a substance resembling saponin, and a non-alkaloidal principle precipitated by tannin and picric acid. No volatile oil, alkaloids or glucosides were found.

A short time ago, Dr. Greshoff of the Koloniaal Museum, Harlem, Holland, inquired of Prof. Trelease, Director of the Missouri Botanical Garden concerning the constituents of *Mitchella repens*, it having been reported to contain hydrocyanic acid. The inquiry being re-

[4] According to Benedikt, Analyse der Fette und Wachsarten, p. 229, even the oil that is obtained from the kernel or seed by means of carbon disulfid possesses the iodin value of about 80. A soap maker recently informed the writer that he prefers to use an olive oil that contains more solid fats or fatty acids than the oil that is generally supplied to pharmacists. Evidently residues that are obtained in the clarification of olive oil are employed for soap making. The writer has never examined this material.

* Am. Journ. Pharm. 1887, p. 228.

ferred to Dr. Kremers of the University of Wisconsin School of Pharmacy, the following work was undertaken to settle the point in question.

Two samples of the whole herb were obtained for analysis, one collected in St. Genevieve Co., Mo., by Prof. Trelease, the other in New York by Prof. Rowlee of Cornell University. Both were collected in October, the latter sample including some of the red, fleshy berries. The experimental work was conducted as follows:

Three samples of 5 g. each of the coarsely powdered herb were allowed to macerate, the first with water, the second with water acidulated slightly with sulphuric acid, the third with water to which a little emulsion of sweet almonds had been added. After several hours the samples were tested for hydrocyanic acid by means of Pagenstecher and Schönbein's reaction, but with negative results in all three cases. The test was applied by dipping strips of filter-paper into a freshly prepared 3 p. c. alcoholic tincture of guaiac, allowing the alcohol to evaporate, moistening the strips with a 0.1 p. c. solution of copper sulphate, and then suspending them in the flasks. The test is a very delicate one, even very minute traces of hydrocyanic acid (but also many other substances) rapidly coloring the paper blue. The above experiments were first made by J. A. Anderson and afterwards duplicated by the writer. A slight difficulty met with was that, even after thorough ventilation, the air of the working-room still contained enough impurities to affect the color of the paper after some time. A check experiment was therefore carried on simultaneously, in which 0.001 g. of wild cherry bark was added to 5 g. of Mitchella herb, and this was tested alongside of the others. The hydrocyanic acid from even this small amount of bark was sufficient to produce an almost immediately blue coloration, while the papers suspended in the three flasks changed only slowly, not more rapidly than a strip of test paper kept in an empty flask.

Although these results seemed quite conclusive, another set of experiments was made, in which, after maceration under the previously mentioned conditions, the contents of the flasks were subjected to distillation with a current of steam, and the distillate tested for hydrocyanic acid by the above test, and also by Ittner's test (ferro-ferric salt in alkaline solution and subsequent acidulation), and by Liebig's test (evaporation with ammonium polysulphide and testing the residue for sulphocyanate with ferric chloride). In no case was

any hydrocyanic acid found. All the above tests applied to the bruised berries gave like negative results. The conclusion therefore is evident that *Mitchella repens*, at least when collected in fall, does not contain any hydrocyanic acid producing glucoside.

Lab. for Pract. Pharm., Univ. of Wis.

On the Occurrence of Methyl Salicylate.

By *Edward Kremers* and *Martha M. James.*

(Report of Research-Committee *G*, U. S. P. Revision.)

Methyl salicylate is officinal in the last edition of our Pharmacopœia in three forms: as such, in the form of oil of sweet birch, and in the form of oil of wintergreen. It is an article of considerable commercial importance and of late has attracted renewed attention as a therapeutic agent. On account of its predominance in several volatile oils, it has been the cause of more or less misunderstanding. The literature on the subject is so instructive in many respects that it seems worth while to review it in order that a lesson or two may be learned if possible. Furthermore, it seems to the writer that by no means the smallest part of the work to be accomplished by the members of the respective research committees will have to consist of a presentation of the data upon which their individual work is based. In fact, it is more important to prepare the field for the next Committee of Revision than to attempt to pass final judgment upon any question at present. It is with this object in view that the following statements concerning the occurrence of methyl salicylate in the vegetable kingdom are submitted as a preliminary report on the subject of the assay of esters occuring in volatile oils. The writer hopes to be able at a later time to make apparent the general relationship of these fragmentary reports.

In the task of sifting the literature on this subject, Dr. R. H. True has materially assisted the writer with his botanical knowledge. In order to emphasize one of the lessons to be learned from this subject, the writer desires to quote the following statement from Dr. True, and hopes that chemists can be persuaded to be more careful in the use of botanical names.

"A casual glance at the accompanying list of plants can hardly fail to suggest the advisability—yes, the necessity—when citing the botanical name of a plant of including also the name of the author of the same. Where a name has been used by but one author, it leads to no especial confusion and the author's name can be supplied. In case, however, the same name has been used by more than one author, unless geographical evidence or accidental circumstances aid in identifying the plant under consideration, we are unable to say with certainty what plant name is intended. This is the case with *Polygala vulgaris* of the accompanying list. Here geographical evidence fails us in case a European plant is concerned and we are unable to say what plant is here meant. Chemists especially will do well to bear this fact in mind when citing botanical names, since botanists have generally already learned the importance of so doing."

In the following list the genera have been assigned to families according to Engler and Prantl's Pflanzenfamilien; the orders of families have been arranged according to the same authority; the species names are given according to the Index Kewensis.

Betulaceæ.

Betula lenta L. The species *Betula lenta* Willd. cited in Schimmel & Co's. Bericht[1] is not mentioned in the Index Kewensis. The author's name is evidently taken from Bourquelot's[2] article. Bourquelot refers to Procter's article,[3] but Procter mentions no botanical authority. Bornemann[4] states that *Betula alba* upon distillation with water-vapor yields the "Birkenrindenoel." On p. 221 he uses the species name *B. lenta* without mentioning the botanical author's name. Now *B. lenta* Du Roi is synonymous with *B. alba* L. That *B. alba* L. yields methyl salicylate apparently has not yet been proven. It is generally accepted to-day that *B. lenta* L. supplies at least the large bulk of natural methyl salicylate of commerce. Pharmaceutical literature, however, does not contain evidence that is very satisfactory scientifically. Neither is it an easy matter to state with precision to whom belongs the honor of discovery. The reasons for this state of affairs will become apparent upon looking over the bibliography of the subject which will be supplied later. From specimens of the bark, collected by Professor True, it becomes ap-

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1 Bericht, April '95, p. 70; Report, p. 73.
2 Compt. rend., 119, p. 802.
3 Am Journ. Pharm., 3, p. 199.
4 Die Flüchtigen Oele, p. 220.

parent that the glucoside yielding methyl salicylate is contained not only in the bark of the twigs, branches and stem, but of the root as well.

Betula lutea Michaux. Gray's Manual, sixth edition, states that both *B. lenta* and *lutea* are sweetly aromatic, though the latter is less so than the former. Professor Cheney, who has frequently observed the taste and odor especially of the twigs, states that lumbermen frequently confuse the two species. It is probable that the same confusion exists in the camps of distillers. A careful examination is still wanting, but may possibly be made in a not distant future.

Lauraceæ.

Lindera Benzoin Meissn. In their list of occurrences Schimmel & Co.[5] cite *Laurus Benzoin* L. The *Benzoin odoriferum* of Schmidt[6] evidently is taken from an earlier number of Schimmel & Co's report,[7] where Nees is mentioned as botanical authority and where *Laurus Benzoin* L. is mentioned as synonym. This species is evidently the *Lindera Benzoin* Blume of Gray's Manual, sixth edition, also the *Benzoin Benzoin* (L.) Coulter of Britton and Brown's New Illustrated Flora.

Schimmel & Co.[7] in 1885 call attention to the fact that they have been able to separate 16 g. of salicylic acid from 200 g. of oil corresponding to about 9—10 p. c. of methyl salicylate, in which form they suppose the acid to be present in the oil. They further state that the oil was obtained from the branches, and that all parts of the shrub are permeated by the aromatic odor which is especially strong in the bark and berries.

A small bundle of twigs, collected in fall, was kindly furnished by Professor William Trelease, Director of the Missouri Botanical Garden. Upon distillation with water acidulated with sulphuric acid, no trace of methyl salicylate could be found in the distillate when tested with ferric chloride. It will be desirable to repeat this test with twigs collected in spring.

Rosaceæ.

Spiræa Ulmaria L. This interesting discovery of methyl salicylate in the flowers of the meadow-sweet was made by Schneegans and Gerock[8] in 1892. Salicylic aldehyde, the only odoriferous principle

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[5] Bericht, April '95, p. 3.
[6] Pharm. Chemie, second ed., II, p. 1000.
[7] Bericht, Sept. '85, p. 28.
[8] Journ. d. Pharm. f. Elsass-Loth., 1892, pp. 3 and 55. Abstract in Jahresber. d. Pharm., 27, p. 164.

that had been discovered previously, is regarded as a product of fermentation. Piperonal and vanillin were also found. How the methyl salicylate was identified does not become apparent from the abstract. The original article was not available.

Erythroxylaceæ.

Erythroxylum(on) Coca Lam. According to van Romburgh,[9] the young leaves of this species contain methyl salicylate ready formed. The same ester occurs, according to the same author, though not more than a trace, in the leaves of

Erythroxylum Bolivianum? No botanical authority is mentioned in the abstract and the original article is not available. This species is not at all mentioned in the Index Kewensis.

Polygalaceæ.

Polygala Senega L. Langbeck[10] in 1881, while preparing the infusion of a three-year-old senega root, observed an odor that reminded him of that of wintergreen. The aqueous distillate gave the characteristic reaction with ferric chloride. Reuter[11] distilled a larger quantity and isolated the salicylic acid obtained by the saponification of the supposed ester. The acid was identified by its crystalline form and by means of the color reaction with ferric chloride.

Polygala Senega L. var. *latifolia* Torrey and Gray. Reuter[12] in 1889 found traces of methyl salicylate, if testing the aqueous distillate of the root with ferric chloride is sufficient evidence, in a commercial specimen of "false senega." By some this false senega was supposed to be derived from *P. Boykinii*, later by others from *P. alba*, but Lloyd[13] claims that it is derived almost exclusively from the above named variety. A careful study of the entire genus, both botanically and chemically, would constitute a valuable contribution to American pharmacography.

Polygala Baldwinii Nutt. H. C. C. Maisch[14] in 1890 found methyl salicylate, with the aid of the ferric chloride test, in the herb of *P. Baldwinii* (author's name not given). T. E. Melter of Jacksonville,

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[9] Schimmel & Co's Report, Oct. 1895, p. 50; from Rec. d. trav. chim. d. P. B., 13, p. 421.

[10] Pharm. Ztg., 1881, p. 261.

[11] Arch. d. Pharm., 227, p. 309.

[12] Ibidem, p. 927.

[13] J. U. Lloyd: Senega Wurzel. Pharm. Rundschau, 7, p. 86.
Karl Mohr: Ueber das Nicht-Vorkommen der Wurzel von Polygala Boykinii mit der Senega des Handels. ibidem, p. 191.
J. M. Maisch: Ueber falsche Senega-Wurzel. do., p. 236.
J. U. Lloyd: Das Nichtvorkommen der Wurzel von Polygala alba mit der Senega des Handels. do., 10, p. 51.

[14] Am. Journ. Pharm., 62, p. 484.

Fla., from whom the specimen was obtained, stated that the fresh herb has a strong odor of oil of wintergreen.

Polygala variabilis H. B. K. *albiflora* D. C. The presence of methyl salicylate in the roots of this species is claimed by van Romburgh.[15] The method of identification is not given in the abstract, which alone was available.

Polygala species. Van Romburgh[15] also found methyl salicylate in the roots of a species which he gives as *P. oleifera* Heckel. This species is not mentioned in the Index Kewensis.

Polygala javana D. C. Van Romburgh[15] further found the ester in the roots of *P. javana.* Since but one species with this name is mentioned in the Index Kewensis, the plant in question is evidently the *P. j.* D. C.

Polygala serpillacea Weihe, with which is synonymous the *P. depressa* Warden. This is probably the *P. depressa* Wenderoth of Bourquelot.[16] The presence of the ester in the roots was determined by the odor and the ferric chloride reaction.

Polygala calcarea F. Schultz. Bourquelot[16] recognized the presence of the ester by the odor of the bruised root and by the ferric chloride test.

Polygala vulgaris L. The presence of ester was ascertained by Bourquelot[16] by the odor of the bruised root and by the ferric chloride test.

Pyrolaceæ.

Hypopitys multiflora Scop., also known as *Monotropa hypopitys* L. From the stem of this plant Bourquelot[16] obtained not only the odor of methyl salicylate, but also isolated crystals of salicylic acid. He regards the ester as being present in the form of a glucoside which is decomposed by a ferment that also decomposes amygdalin.

Ericaceæ.

Gaultheria procumbens L. The statement fs freely made in American pharmaceutical literature that Procter demonstrated that wintergreen oil contains salicylic acid and that Cahours "confirmed" Procter's work. It was Cahours[17] who showed the oil to consist principally of methyl salicylate, both by analysis and synthesis. The

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[15] Report of Schimmel & Co., Oct. 1895, p. 50; from Rec. de trav. chim. d. P. B., 13, p. 421.
[16] Compt. rend., 119, p. 802.
[17] Am. Journ. Pharm., 15, p. 241; from Journ. de Pharm. et de Chim., 1843.

botanical author's name is not mentioned in Procter's abstract of Cahour's work.

Gaultheria fragrantissima Wall. Synonyms: *G. punctata* Blume and *G. Leschenaultii* D. C. In 1867 J. Broughton,[18] government quinologist in India, examined the oil of *Andromeda Leschenaultii*, "a very common hill plant." He claims to have identified the oil as "methyl-salicylic acid, and almost identical with the Canadian oil of wintergreen." The method of identification is not mentioned in the abstract of the letter published in the Pharmaceutical Journal.[19]

This is evidently Schmidt's[20] source of information.

The supposition that the *A. Leschenaultii* of Broughton is identical with *G. fragrantissima* Wall. has already been expressed by the editor of the April number of Schimmel & Co.'s Bericht for 1895 (p. 70). The name *G. Leschenaultii* is not mentioned in the Index Kewensis.

At the request of Prof. Oudemans, H. Koehler[21] in 1879 examined the oil of *G. punctata* (no author mentioned) supplied by Dr. de Vrij. Unfortunately the geographic source of the oil is not mentioned. The ester as well as its saponification products, salicylic acid and methyl alcohol were identified. E. Bourquelot[22] mentions Blume as the botanical author's name, which probably is correct.

Gaultheria leucocarpa Blume. Koehler[21] also examined the oil from *G. leucocarpa* in 1879. It also was obtained from de Vrij and probably from the same geographical source. Substantially the same proof for the presence of the ester was brought as in the other oil examined by him. In this case also Koehler does not mention the botanical author's name, but Bourquelot[22] mentions Blume, which probably is correct.

Indian and Alexandrian Sennas.

By *R. H. Denniston.*

(Under the direction of Research Committee *C* of the Revision Committee of the U. S. P.

This problem has already received considerable attention by histologists.

[18] Pharm. Journ. & Trans. [3], 11, p. 281.
[19] The writer is indebted to Prof. A. B. Prescott, Chairman of the Special Committee on Research of the A. Ph. A., for a copy of this abstract.
[20] Pharm. Chemie, 2nd ed., II, p. 1000.
[21] Berichte, 12, p. 246.
[22] Compt. rend., 119, p. 802.

The results of Prof. L. E. Sayre's work appeared in two numbers of the Am. Journal of Pharmacy, Nov. 1896 and June 1897, and the results of Dr. Schneider's work in the American Druggist of April 10th, 1897.

As the results obtained by these gentlemen differ somewhat on essential points, it was deemed advisable to submit the question to a further investigation.

In beginning the work, the epidermis on different portions of authentic leaves of both the Alexandrian and Indian material was examined. Portions of the epidermis were taken from both the upper and lower sides of the leaf, and from the tip, middle and base in each case.

The characteristics noted were then tabulated under the following headings.

1. Number of hairs present on a piece of epidermis visible in the field using a B. & L. microscope, 2 in. eyepiece and ⅙ in. objective (i. e. 0.125 sq. mm.).
2. Distance these hairs are apart.
3. Form and size of hairs.
4. Number and shape of epidermal cells around hairs.
5. Shape of stomata.
6. Number of nebenzellen around stomata.
7. Form of nebenzellen around stomata.
8. Size of epidermal cells.

Several leaves of each species were examined in this way, and the characteristics were found to be quite uniform in the same species.

1. Taking up the results found, in order, the hairs were found to be distributed on the leaf rather more thickly toward the point than at the base, also that the hairs were more numerous on the lower side of the leaf.

On the upper side of the leaf there were found to be in the field (2 in. eye piece and ⅙ in. obj.) from 4 to 6 hairs in the Alex. Senna; on the lower side of the leaf there were found to be from 5 to 12 hairs.

In the same field the upper side of the Indian Senna leaf showed from 0 to 2 hairs, and the lower side from 3 to 6 hairs. Thus we see that the number of hairs on the upper side of the Alex. leaf and on the lower side of the Indian leaf nearly correspond.

Thus this characteristic would place an unknown fragment of epidermis in the Indian class if it had three hairs or less, and in the Alexandrian, if it contained more than six hairs in the field mentioned above.

2. As we rarely find a fragment in the finer powders (60—80) as large as we have just been considering, it seemed desirable to find a way in which the occurrence of hairs could be made use of on smaller fragments, and it was found that counting the number of epidermal cells between any two hair scars proved to be a fairly accurate method. Thus the average distance the hairs are apart in Alexandrian, both upper and lower surfaces, is three epidermal cells, and in the Indian six. I think this will be somewhat easier than the method Schneider suggests of counting the number of epidermal cells in a certain area and the nnmber of hairs in the same, although the result is practically the same.

3. As for the form of hairs, those of Alexandrian are somewhat straighter than those of Indian. Out of about 200 hairs of each kind examined, one in five in Indian was found to be curved, while in Alexandrian the proportion was one to twelve. This differs from the result found by Sayre.

4. As for the epidermal cells around the hairs, the number was found to range from 5 to 8 in the Indian with 6 as a usual number. In Alexandrian, the number ranged from 4 to 8 with 5 as the usual number. This result agrees with that found by Schneider in so far as the usual number of bounding cells is concerned in each case, but differs slightly in the range of limits.

5. The shape of the stomata was not found to be characteristic. They were examined on every portion of the leaf, and many leaves examined, and the majority of stomata of the Indian were not found to be of the long type as is stated by Sayre.

6. The stomata in both sennas were found to usually have two nebenzellen, although the proportion having two is greater in the Indian species. In Indian Senna the proportion is, 1 having 3 nebenzellen to 7 having 2, while in the Alexandrian the proportion is 1 having 3 to 2 having 2.

7. I did not find the size of the nebenzellen to be very characteristic, although in the Alexandrian species one of the nebenzellen walls is usually quite close to one of the guard cell walls, thus giving it a somewhat more crowded appearance than in the Indian.

8. The epidermal cells were found to be somewhat smaller on the average in Alexandrian than in Indian. This coincides with the statement of Schneider.

The powders of the authentic Alexandrian and Indian material were now taken up and studied in the same manner. Here another characteristic comes in, that of counting the number of detached hairs in the field. There were found to be in the pure Alex. powder (No. 60 or No. 80) from 5 to 28 hairs or an average of 16 in a field (using 1 in eye piece and ⅔ in objective). In the pure Indian powder (No. 60 or No. 80) but 2—7 hairs or an average of 5 were to be found in a field of the same size.

The mixed powders were next studied and conclusions drawn as to percent of adulteration.

In order to determine all the fragments under a cover glass and not count any twice, the cover was ruled up into divisions. The mount was made by placing a drop of chloral-glycerine on a slide, covering with powder and blowing off all that does not adhere to the drop. The cover is then placed and the slide heated over a gas jet till bubbles form. By taking drops of uniform size, this method gave fairly good results, more satisfactory than the method suggested by Sayre of shaking powder in a vial.

In making a test, at least five slides should be prepared and studied.

1st. Search for detached hairs and average the number found in a number of fields. If the average falls below 16, the presence of Indian may be suspected. (An arbitrary figure, such as 16, should not be set as the limit, but anyone using the test should make preparations of authentic Alexandrian powder of the same degree of fineness as the suspected powder, using the same sized drop of chloral-glycerine in each case. This can be used as a standard.)

2nd. Search for characteristic pieces of epidermis, using tests under (2) and (6) above as the principal ones, and tabulate results to show percent of adulteration.

I have used this test on unknown mixtures of the two Sennas with fairly accurate results and think anyone can do the same with a little study.

Pharmacognostical Laboratory, University of Wisconsin.

MONTHLY REVIEW.

Chemistry.

The Liquid Acids of Seal Fat.—The fat of the Caspian seal which was obtained from the firm S. & P. Kusnezow of Astrachan was examined by Eugen Ljubarsky. It was a reddish liquid of fishy odor, and was readily altered by atmospheric oxygen, becoming rancid. Of the fatty acids about 17 p. c. are saturated and most likely palmitic acid. The remaining 83 p. c. are unsaturated and consist principally of oleic acid, $C_{18}H_{34}O_2$, and hypogæic acids, $C_{16}H_{30}O_2$.

[Journ. f. pr. Chem. 57, p. 19.] *E. K.*

Rhodinol.—In 1891 Ulrich Eckart,[1] while working in Poleck's laboratory, isolated a primary alcohol, $C_{10}H_{18}O$, with two double bonds, from oil of rose. Later Bertram and Gildemeister[2] demonstrated the identity of this alcohol with that obtained from commercial geranium oil or orasoil and suggested the name geraniol. Inasmuch as this alcohol was first isolated from an oil obtained from the grasses and not from an oil from the geranium family, Poleck protested against this substitution.[3] Recently Tiemann and Schmidt,[4] disregarding Poleck's protest, have applied the term rhodinol to a compound $C_{10}H_{20}O$, viz. l-citronellol. Against this disregard for the rights of the originator of the term rhodinol, Poleck protests once more.

[Berichte, 31, p. 29.] *E. K.*

The Amount of Sugar in Mullein Flowers.—A diabetic patient was placed on carbohydrate-free diet and after several weeks his urine was free from sugar, when suddenly an appreciable amount of sugar showed itself. This amount continued although strict diet was apparently observed. Upon questioning, however, it was learned that the patient drank daily considerable quantities of mullein tea. A. Schneegans, therefore, decided to redetermine the amount of sugar in mullein flowers. According to Rebling, sugar is present to the amount of 11 p. c., but this statement was questioned by Flueckiger. The flowers were dried at 100° and repeatedly extracted with boiling water. Solution of basic lead acetate was added to the extract to remove albuminous substances, the excess of lead was removed with the aid of sodium carbonate and the filtrate titrated with Fehling's solution. The average amount of invert sugar thus determined was 10.4 p. c.

[Journ. d. Pharm. v. E.-L., 25, p. 17.] *E. K.*

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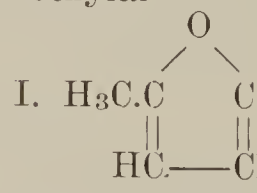
[1] Archiv d. Pharm., 229, p. 355.
[2] Journ. f. pr. Chem. [2], 49, p. 185; 53, p. 225.
[3] ibidem [2], 56, p. 515.
[4] Ber. 29, p. 928.

Sylvane from Beechtar creosote.—About seventeen years ago Atterberg[1] isolated from the tar oil of *Pinus sylvestris* a substance C_5H_6O, which he recognized as methyl furane and which he named sylvane. In connection with their investigations of the sugar oils, E. Fischer and Laycock[2] stated that dimethyl furane and higher methylated furanes occurred in the low boiling portions of wood tar. C. Harries now finds a substance, which he has reason to believe to be identical with that of Atterberg, in the fraction 60—70° of the beechtar creosote, and which he demonstrates to be α methyl furane.

The fraction below 70° of beechtar oil—150 ko. tar yield about 10 ko.—is shaken with sodium acid sulphite solution to remove aldehydes and ketones (about 10—12 ko. of a 40 p. c. solution are necessary). To remove acids, the remaining oil is shaken with about 10 ko. of a 10 p. c. soda solution and the oil dried with potassium carbonate and carefully fractionated with a column. Fraction 60—70° (about 2.4 ko.) are heated with sodium on a waterbath, 500 g. of oil requiring about 50 g. of sodium. The oil is again fractionated when the principal fraction boils at about 65° under 759 mm. pressure. It has a sp. gr. of 0.827 at 18°, is a colorless, limpid liquid of an agreable ethereal odor, but turns yellow upon standing a day. A pine shaving moistened with concentrated hydrochloric acid is colored emerald-green by it.

Upon hydrolysis with methyl alcoholic hydrochloric acid it yields levuline methylal



I. $H_3C.C(O)CH \;||\; HC.—CH + H_2O(HCl) = CH_3.CO.CH_2CH_2CHO.$

II. $CH_3.CO.CH_2CH_2CHO + 2OH.CH_3(HCl) = CH_3.CO.CH_2CH_2CH(OCH_3)_2 + H_2O.$

With very dilute hydrochloric acid this dimethyl ether is readily hydrolized to the keto aldehyde, pentanonal or levulinic aldehyde. This was oxidized to the corresponding acid. With ammonia and phenyl hydrazine unstable addition and substitution products are produced which upon standing rearrange themselves into dihydropyridazine derivatives.

[Berichte, 31, p. 37.] *E. K.*

On the Valuation of Malt Extract. — Under the title of "Let us take counsel together", J. M. Francis urges a thorough discussion in detail of the various processes which are employed by those interested in starch digestives, in the hope that before the issue of the next revision of the Pharmacopœia, a test which will be just may be decided upon. The method proposed by the author is that of J. F. C. Junck (Am. J. Pharm., 1883)

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[1] Berichte, 13, p. 879.
[2] ibidem, 22, p. 101.

modified to render it more exact. Explicit directions are given for preparing the solutions used in the test:

Solution of the digestant is made by dissolving 5 gm. or any desired amount in sufficient water (40° C.) to measure 100 cc.

Iodine solution contains iodine 2 gm., potassium iodide 5 gm., water to make 250 cc. From this the iodine solution used in the test is made by diluting 1.5 cc. with water to make 1000 cc.

Starch Solution. A mixture of 10 gm. of potato starch and 50 cc. water are poured into 400 gm. of boiling water, all the starch rinsed into the boiling mixture and boiling continued for 15 minutes; when cool enough water to make 500 gm. is added.

To perform the test 100 gm. starch solution are weighed into a vial or tube and placed in a water bath kept at a constant temperature of 40° C., and when the solution has assumed this temperature, the calculated measure of digestant is added, and the mixture replaced in the water bath. At intervals of one minute, by means of minim dropper, two minims of the starch solution are added to 60 cc. iodine contained in a vial; the color produced is noted, and the digestion continued until no change of tint is produced in a vial of iodine solution standing on a white base and between two other vials of the test solution to which no starch solution has been added. The time required is noted and if the digestion is completed in less than thirty minutes, the test is repeated, using a smaller measure of the digestant, until the proportion required to digest 100 gm. of starch paste in thirty minutes is determined.

[Bull. of Pharm., 12, p. 52.) *W. A. P.*

A New Volumetric Method for the Estimation of Grape Sugar, Milk Sugar and other Bodies Reacting with Fehling's Solution. — E. Riegler recommends a process depending upon the determination of copper in a given volume of Fehling's solution, then submitting a like volume of the solution to the reducing action of the sugar to be estimated, again determining copper and from the difference, which represents copper reduced by the sugar, calculating the amount of reducible sugar present. Copper is to be determined by de Haen's method and copper values taken according to Allihu's tables.

The copper solution is prepared by dissolving 34.64 gm. crystallized copper sulphate in 500 cc. water. The Rochelle salt solution consists of 173 gm. Rochelle salt and 50 gm. caustic soda dissolved in 500 cc. water.

The amount of copper in 10 cc. of the copper solution is determined, once for all, as follows: to 10 cc. of the copper solution, measured with much care into a 200 cc. flask are added 10 cc. of Rochelle salt solution, about 100 cc. water and 2 cc. pure concentrated sulphuric acid and all mixed well; when cool about 1 gm. potassium iodide dissolved in 10 cc. water is

added and after 10 minutes 3 cc. starch solution and the free iodine titrated by means of decinormal thiosulphate solution until the blue color disappears and the solution remains colorless for at least 5 minutes. From the amount of iodine found the copper contained in the 10 cc. used is calculated according to the equation: $2CuSO_4+4KI=2K_2SO_4+Cu_2I_2+I_2$.

To determine grape sugar, exactly 10 cc. of copper solution are measured into a beaker, capacity about 200 cc., 10 cc. Rochelle salt solution and 30 cc. water are added, heated to boiling on a wire gauze; to the boiling solution 10 cc. of sugar solution, which must be approximately 1 p. c., are added from a pipette, and boiling continued for a few seconds. The beaker is removed from the fire, the precipitate allowed to subside, the clear liquid filtered through a small filter and precipitate and filter washed with 80 cc. water. In the filtrate the copper is determined as before, the difference in copper being the quantity reduced by the sugar to which it is changed by consulting Allihu's tables.

Determination of milk sugar in milk: To remove albuminoids, which would interfere with the estimation of milk sugar, the author recommends a solution of asaprol, prepared by dissolving asaprol 15 gm., citric acid, powdered, 15 g. in water 500 cc. Of the reagent 15 cc. are poured into a 100 cc. measuring flack, exactly 10 cc. milk are added and water to make 100 cc.; the mixture is well shaken, warmed to about 60° C. and filtered. Of the filtrate, which is transparent and free from albuminoids, 20 cc. are measured into a beaker, 10 cc. copper solution, 10 cc. Rochelle salt solution and 30 cc. water are added and boiled for six minutes. The precipitate is allowed to subside, the liquid filtered while still hot and the filter washed as before. From the amount of copper reduced, determined as previously described, milk sugar is calculated according to Soxhlet's table.

The author appends figures obtained with pure dextrose which agree fairly well with the theory, the variations shown in these determinations (4) not greatly exceeding those of gravimetric methods. For milk sugar no figures are quoted but we are assured that these determinations agree well with those by gravimetric methods.

[Zeitsch. f. anal. Chem., 1898, p. 22.] *W. A. P.*

An Examination of Some Commercial Powdered Extracts of Licorice.—Calvin O. Kinzey comments upon the almost universal adulteration of powdered extracts of licorice and states that while it is well known that its value depends almost entirely upon the amount of glycyrrhizin, no effort has been made to establish a standard amount of this principle required in a good extract. In elaborating a method of assay, the writer consulted the literature and found that little had been written upon the subject, and this in a rather vague manner in regard to solvents employed in dissolving the glycyrrhizin from the extract, and the details of precipitating the

glycyrrhizin. After experimenting with various methods, the method of Diehl (Pharm. Rundschau 1, p. 21), with some modifications, was adopted.

Method of Analysis. Moisture.—A weighed quantity (about 1 gramme) of the extract was put in a porcelain crucible and dried in an air-bath at a temperature between 100° and 110° C. The loss in weight was taken as the amount of moisture present. Ash.—The residue remaining after treating as above was ignited to low redness over a Bunsen burner, until, on prolonged ignition, the weight remained constant. The residue gave the inorganic matter in the extract. Insoluble matter.—One gramme of the extract was carefully weighed and treated in a beaker with 25 cc. solvent, prepared by mixing:

Official Ammonia Water	40 cc.
Official Alcohol	240 cc.
Sufficient Water to make	1000 cc.

The mixture was stirred at close intervals during an hour, and then allowed to stand for about twelve hours, so that the insoluble matter could settle out. The supernatant liquid was decanted upon balanced filters, the residue in the beaker treated with 5 cc. more of the solvent, allowed to settle again, decanted as before, and the insoluble matter transferred to the filter and washed until the washings passed through colorless. The filters and residue were then placed in an air-bath and dried at 100°—110° C. Glycyrrhizin.—The filtrate from the above was acidified with dilute sulphuric acid, which precipitated the glycyrrhizin as a dark brown scale, which coagulated on standing. The precipitate was collected on balanced filters, washed with water made slightly acid with acetic acid until all the sulphuric acid was washed out, and then dried in an air-bath at 105° C., a higher heat being avoided on account of the liability of decomposing the glycyrrhizin above that point.

The following shows the composition of the samples examined.

Manufacturer.	Brand.	Moisture.	Ash.	Insoluble matter.	Glycyrrhizin.
1	Spanish.	6.52	3.70	36.52	6.40
2	Greek.	6.26	8.18	22.06	14.39
2	Spanish.	5.00	5.51	25.54	10.75
3	American.	5.62	6.79	12.27	7.63
3	Spanish.	7.08	6.52	29.20	5.28
4	Spanish.	6.96	6.56	20.35	10.41
4	Greek.	6.71	7.82	9.65	18.59
5	"	7.96	5.77	15.21	8.90
5	"	8.25	5.54	7.40	27.78
5	"	8.46	4.67	19.41	9.50
5	"	9.19	6.76	11.12	8.94
6	"	5.78	7.49	5.95	11.63

[Am. Journ. Pharm., 70, p. 23.] *W. A. P.*

Botany and Pharmacognosy.

Horn-eating Insects. — Of interest is the discovery in Germany of a beetle which causes damage by gnawing horn scoops, spoons, etc. It is called in Germany the *Speckkäfer, Anthremus scrophulariæ*, and belongs to the family *Dermestidæ* of the class *Coleoptera*.

[Pharm. Zeit. 43, p. 41.] *R. H. T.*

Red Yeasts. — The above title is that given to a paper by Katherine E. Golden and Carleton G. Ferris in which three forms of the so-called red yeasts are described together with culture methods, and media used in their study. The three forms were all obtained from the air of the laboratory. None of the three are true Saccharomyces, and two of them appear to be new species. [Bot. Gazette, 25, p. 39.] *L. S. Cheney.*

The Variable Effects of Hydrocyanic Acid Gas on Plants and Animals. — Albert F. Woods of the Department of Agriculture reports on the results of experiments evidently made with the intention of learning about the value of hydrocyanic acid as an insecticide. Plants of various families and in different stages of growth were subjected to varying amounts of hydrocyanic acid gas, and were found to be affected by it in different degrees, according to the kind of plants, its age, and other conditions of growth and development. Animals, mainly insects, were also found to vary, even within the same family, in like manner. Mites were the most resistant of any of the organisms studied, often recovering after several hours of complete paralysis and apparent death. [Bot. Gazette, 25, p. 113.] *R. H. T.*

Poisoning by Convallaria majalis. — Dr. J. H. Andrew reports a case of poisoning by lily-of-the-valley. A child two years old was given by mistake a teaspoonful of the fluid extract. The characteristic symptoms were restlessness, a continuous trembling of the limbs and once, general convulsions. The patient was aroused with difficulty and immediately relapsed again into stupor. The pupils were moderately dilated; temperature 90° F.; pulse 140 at times and again so rapid that it could not be counted, but always exceedingly irregular; respiration shallow and superficial, rather rapid but very regular: face somewhat flushed: no gastric-intestinal irritation, neither diuretic nor diaphoretic effect. Consciousness was gradually regained and also the normal condition.

[Therapeut. Gaz. 22, p. 144.] *R. H. T.*

Poisoning by Honey. — Dr. C. D. Voorhees reports on an interesting case of poisoning by honey. The patient complained shortly after his mid-day meal at which he had eaten a quarter of a pound of honey in the comb, that a strange feeling came over him; an incessant burning of the forehead, all sorts of objects, wheels, strings, etc., appeared to pass before his eyes;

his face felt flushed, but was pallid. His symptoms an hour after the meal were extreme pallor, cold skin, heart weak and irregular, eyes dull. He seemed in a dazed condition and complained he could not see. Ipecac was administered. Convulsive movements of the hands were controlled by holding them firmly, a convulsion of the whole body followed in about one minute, followed by exhaustion and unconsciousness. Breathing fast and heavy. After vomiting freely, consciousness began to return. A feeling of coldness and exhaustion was relieved after some hours by administration of stimulants and heat. After seven hours, he was comfortably warm, the only remaining symptoms being widely dilated pupils, a tingling sensation on tip and sides of tongue and a feeling of exhaustion.

The honey had a decidedly bitter taste.

[Therapeut. Gaz. 22, p. 144.] *R. H. T.*

Experiments on the Morphology of Arisæma Triphyllum. — George Atkinson of Cornell University read a paper on the change of sex of the Indian turnip before the Society for Plant Morphology and Physiology at Ithaca. Female, male and neuter plants, the history of which was known by growing them in pots for one season, were potted, some in rich soil and others in poor soil, the object being to change them from male to female, etc. by varying amounts of nutriment. Male plants in rich soil were in one year changed to female, and large neuter plants in rich soil were changed to female.

In a second series, large two-leaved female plants, with large bulbs, were selected at the time the fundament of the flowers was formed. The bulbs were cut so as to remove all but a small portion in connection with the bud. By this removal of the larger part of the stored food the plants were changed to male. [Bot. Gazette, 25, p. 114.] *R. H. T.*

Observations on American Squaw-root. — The root of *Conopholis Americana* Wallr., or squaw-root, as a drug is related to the root of the parasite *Epiphegus virginiana* Barton, the cancer-root. A report of an exhaustive study of the vegetative parts of the former plant has recently been made by Lucy L. W. Wilson. The invariable host is the oak. The extreme degradation of the parasite and the intimate relation between it and the oak roots caused the author to compare it with members of the *Balanophoreæ* and *Rafflesiaceæ*, rather than with parasitic members of the *Scrophulariaceæ*. The seedling parasite seemed early to attack young oak roots, and steadily grew for ten to twelve years, until a large mass six inches across might be formed. This mass was chiefly characterized by the abundance of sclerenchyma patches, developed by the oak host through the irritant action of the invading parasite. The presence of the stomata on the stem and their absence on the scale leaves was pointed out, while the double circle of bundles traversing the flowering stem was peculiar in that the xylem of these faced each other. [Bot. Gaz. 25, p. 115.] *R. H. T.*

Hamamelin. — Upon looking up the literature on the preparation of hamamelin, L. Ough found that Coe in his Concentrated organic medicines, published in 1869, describes the resinoid to be prepared from the bark, while according to Squire it is obtained from the leaves, and Martindale leads one to infer that it is prepared from a mixture of the leaves and bark. Bentley states that the bark has been largely used in England and America to check excessive mucous discharge and for the cure of hæmorrhoids. These contradictory statements led the author to prepare alcoholic extracts from both bark and leaves. The leaves when extracted with rectified spirit yielded 7 p. c. of a dark brownish extract of a peculiar resinous odor and of a slightly hygroscopic nature. The bark treated in a similar manner, gave 16 p. c. of a light brown resinous extract, which was more readily reduced to a powder than the foregoing. A third batch was prepared from the leaves with spirit of a sp. gr. of 0.920 with a yield of 12 p. c. It resembled that of the bark. Suppositories were prepared with the three extracts and those prepared from the extract obtained from the leaves with rectified spirit were pronounced best by a medical practitioner who tried them. [Chemist and Druggist, 1898, p. 86.] *E. K.*

Prioria Copaifera. — Prioria copaifera is a large tree of the West Indies, known in the Bath district as the "oil tree." It has been described by Wm. Fawcett in the Bulletin of the Botanical Department, Jamaica, Vol. IV, p. 77. The analysis of Henry Trimble, published in the same Bulletin, of the so-called gum of the "oil tree" showed it to be either a resinous body, very poor in oxygen, or else a hydrocarbon or a mixture of several of them. C. W. Dirmitt has continued the investigation and finds that it possibly bears some relationship to the higher fatty acids or fats. He finds its saponification equivalent to be 15.10, its iodine value 46.39, flash point 183° C., and its burning point 190° C. The so-called gum, according to Trimble, is a thick turbid adhesive liquid resembling copaiba in appearance. It is soluble in absolute alcohol, ether, chloroform, benzol, phenol, oil of turpentine, cotton-seed oil, etc. Alcohol of the specific gravity 0.820 does not completely dissolve it. The portion left undissolved appears to be the substance causing the turbidity of the sample. Absolute alcohol and chloroform dissolve this residue. Aqueous solutions of sodium and potassium hydrates and ammonia water produce white insoluble mixtures. Magnesium oxide and water form a solid mass. Upon distillation with water no oily layer separates in the distillate. The specific gravity of the original sample was slightly higher than water, although it floats upon the latter. Its physical properties, no doubt, suggest a resemblance to copaiba balsam and therefore the specific name of the tree; but in composition and chemical properties it bears no relation to either copaiba balsam or gurjun balsam. [Amer. Jour. Pharm., 70, p. 10.] *H. K.*

Powdered Rhubarb and Senna.—In an illustrated article, S. E. Jelliffe calls attention to the microscopical characteristics of powdered rhubarb and senna. Rhubarb is characterized by its large calcium oxalate crystals measuring up to 100 mikra. They are largely of the spherical agglomerative type, although some tabular octahedral forms also occur. The starch grains are mostly simple, though compound grains are not rare. They are spherical or angular and in size average 20 to 30 mikra. Peculiar acicular crystals in clusters, deeply stained, are met with in the powder; they are said to be chrysophanic acid. The ducts have annular, spiral and reticulated markings. Senna possesses characteristic hairs which vary in size and reach a length of 300 mikra and average about 25 mikra at the base. They are usually sharply bent below the middle, the upper portion being minutely tuberculate. The cells clustered about the scars and the number of leaf scars found upon a fragment are characters used by some writers to distinguish the varieties of senna. These have proven inadequate in the author's experiments.*

Tabular and spherical agglomerate crystals are found, though at times rare. In fresh powders the chloroplastids are prominent and numerous. The stomata, held to be characteristic by some writers, exhibit great variety in form.* [Druggists Circular, 32, p. 7.] *H. K.*

Peter Smith's Dispensatory.—J. U. Lloyd records the discovery of a copy of what is possibly the first Western work on materia medica. Peter Smith is one of the authorities consulted by Rafinesque in the formation of his Materia Medica, but Smith's book was lost to sight. It is to be regretted that Dr. Smith neglected the use of botanical names. His plants are all employed under common names, but he describes the appearance and habitat of each specimen so carefully as to enable the experienced reader to identify most of them. A few examples of lost terms and others still in use may be given: Brinton's or Culver's Root; Miami Columbo (American Columbo) Root; The Nine-bark Root; The Square-stalk Root; The Corn Snake Root; The Horse Balm; The Mountain Mint; The Sore Throat or Blueberry Root; The Devil's Nip; The Devil's Bit; The Backache Root; Home Ipecacuanha, meaning thereby Indian Physic.

Dr. Smith pointed out an "insect" theory of disease, and placed himself (pp. XIV, XV) in the ranks of the microbe theorists of to-day by asserting, in an extended argument, that the "plague yellow fever and other bilious and contagious complaints" were caused by "invisible insects;" and in accordance with his methods Smith takes pains to credit another for the suggestion. [Amer. Jour. Pharm., 70, p. 1.] *H. K.*

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* Compare with the papers of A. Schneider, American Druggist, 1897, p. 195; and L. E. Sayre, American Journal of Pharmacy, 1897, p. 298.

Vanilla.—H. H. Rusby contributes an article to the species, distribution and habits of vanilla plants, and the cultivation and curing of vanilla. In the Index Kewensis (1896), 33 species of vanilla are recognized. Bentham and Hooker (Genera Plantarum) and Engler and Prantl (Pflanzenfamilien) allow but 20. In the New World there are 18 species and in the Old World 15. The larger number of these species yield fragrant fruits. It is not unlikely that some other one or more species by cultivation and improvement might be made to yield a vanilla equal or superior to that now yielded by *V. planifolia* and its varieties. Dr. Rusby collected in the Andes representatives of a distinct genus (Sobrahia), very closely related to vanilla, the pod of which develops a strong vanilla-like odor upon maturity.

V. planifolia is widely cultivated, the principal regions being in Mexico and Bourbon, or Reunion Island. The West Indies, Java, Mauritius, Ceylon, the Fijis and the Straits Settlements also yield important supplies. The methods of cultivation differ widely in the different regions, but are all based upon certain principles deduced from the study of the habits of the plant in its wild state. In Mexico a number of nature names are used to characterize the condition or quality of the plant, viz. (1) "vanilla corrente," meaning regular or current vanilla; (2) "vanilla sylvestris," meaning wild vanilla; (3) "vanilla mestiza," meaning medium vanilla; (4) "v. puerea," meaning hog vanilla, and (5) "vanillon," meaning big vanilla. All except the last apparently proceed from varieties or states of *V. planifolia*. The exception, vanillon, is the product of *V. pompona*, a distinct native species. This bean is much shorter, twice as thick, looks like a banana, and has a pleasant, fruity flavor, on account of which it is eaten.

A well-matured fruit, if also well cured, should become of a beautiful silvery-white color, due to a crust of fine crystals which develop upon it. This will not occur in the case of a fruit prematurely gathered. (F. de Hires.)

Regarding the poisoning by vanilla of those who handle the bean Dr. Rusby is inclined to think that it is most likely due to the raphides of calcium oxalate.

Vanilla.—S. E. Jelliffe considers the structure of and moulds upon the vanilla fruit. Two moulds were found, viz. *Aspergillus repens* and *Mucor circinelloides*.

Vanilla.—Virgil Coblentz under the chemistry of vanilla indicates the relation of the different compounds concerned in the products of vanillin. The latter is prepared synthetically as follows:

I. (a) By oxidation of aliphatic side chains in coniferin.
   (b) From eugenol and iso-eugenol by oxidation.
II. From toluene or cinnamic acid or benzaldehyde.
III. From protocatechuic aldehyde.
IV. From guaiacol.

[Journal of Pharmacology, 5, p. 29.] *H. K.*

Literary.

Books and Pamphlets Received:

Felix Alcan, Éditeur—Paris. Dictionnaire de Physiologie par Charles Richet, Professeur de Physiologie à la Faculté de Médecine, Paris. Premier fascicule du tome III, pp. 320, avec 23 gravures dans le texte. Cerveau (*Suite*)—Champignons. 1898.

Librairie J. B. Baillière et Fils—Paris. Formulaire des Medicaments Nouveaux par H. Bocquillon-Limousin avec une introduction par Henri Huchard, 9e édition, revue, corrigée et augmentée. 1 vol., pp. VIII, 320. 1898. Cartonné. Fr. 3.00.

Ernst Guenther's Verlag—Leipzig. Geschichte der Pharmacie. Unter Mitwirkung angesehener Fachgenossen herausgegeben von Dr. J. Berendes, Apotheker. Erste Lieferung, pp. 80. 1898. M. 2.00.

Verlag von Fr. Eugen Koehler. Koehler's neueste und wichtigste Medicinal-Pflanzen. Ergänzungsband zu dem in den Jahren 1883—1890 erschienenen Hauptwerke in 2 Bänden. Herausgegeben von Dr. Max Vogtherr. Lieferungen 17, 18 und 19. 1898. Preis pro Lieferung M. 1.00.

Verlag von Strecker und Moser—Stuttgart. Apothekerkalender für das Deutsche Reich, begründet von Oscar Schlickum. 1898. Mit Anhang: Die Apotheken der Schweiz und Luxemburgs sowie einer offiziellen Zusammenstellung sämtlicher Personal-Verhältnisse des Deutschen Apotheker-Vereins. Herausgegeben von Dr. Franz Luedtke. Sechzehnter Jahrgang. Ein Bd., pp. 241 und 135. Mit einem Bildniss von Dr. H. Beckurts. M. 2.50.

Chr. Herm. Tauchnitz—Leipzig. Anatomischer Atlas der Pharmakognosie und Nahrungsmittelkunde. Von Dr. A. Tschirch und Dr. O. Oesterle. Lieferung 13, Tafeln 61—65: *Cort. Condurango, Flor. Arnicae, Fruct. Juniperi, Rhiz. Hydrastis, Herb. Stramonii, Sem. Stramonii.* 1898. M. 1.50.

U. S. Dept. of Agriculture—Washington, D. C. Yearbook of the United States Department of Agriculture 1896. One vol., pp. 686. Government Printing Office. 1897.

Deutsche Verlags-Anstalt—Stuttgart. Lexikon der gesamten Technik und ihrer Hilfswissenschaften. Herausgegeben von Otto Lueger im Verein mit Fachgenossen. XXVIII. Abteilung: Mauerstärker—Nagelfabrikation, pp. 321—480, mit zahlreichen Abbildungen. 1897. M. 5.00. Preis des ganzen Werkes M. 175.00.

John Wiley & Sons — New York. Manual of qualitative chemical analysis. By the late Dr. C. Remigius Fresenius. Authorized translation by Horace L. Wells, Professor of Analytical Chemistry and Metallurgy in the Sheffield Scientific School of Yale University. New edition, thoroughly revised, from the sixteenth German edition. One vol., pp. XVIII, 748. 1897. $5.00.

Authors—Leipzig. Die Bestandtheile des Rosenöls und verwandter ätherischer Oele. Von J. Bertram und E. Gildemeister. Pamphlet, pp. 9. Reprint from Journ. f. pr. Chem.

Author—Madison, Wisc. Aluminium alcoholates. By Orin Edson Crooker. Reprint from the Trans. of the Wisc. Acad. of Sc. Arts and Letters. Pamphlet, pp. 6.

Authors—Leipzig. Beiträge zur Kenntniss der ätherischen Oele VI: 1. Mandarinenöl; 2. Culilawaöl; 3. Rosmarinöl; 4. Aetherisches Oel der Beeren von *Schinus molle* L. By Eduard Gildemeister und Karl Stephan. Pamphlet, pp. 11. Reprint from Archiv der Pharmazie.

Author—Cincinnati. Vanilla planifolia. By John Uri Lloyd. Pamphlet, pp. 13. Reprint from Western Druggist.

—— Dr. Peter Smith and his dispensatory. By John Uri Lloyd. Pamphlet, pp. 9. Reprint from Am. Journ. Pharm.

Author—Berlin. Ueber neu eingegangene Drogen. Von P. Siedler. Sonderabdruck aus der Ber. d. d. Pharm. Gesellsch. 1898. Pamphlet, pp. 14.

U. S. Dept. of Agriculture—Washington, D. C. Observations on recent cases of mushroom poisoning in the District of Columbia. Circular No. 13, Division of Botany. Pamphlet, pp. 24.

Reviews.

DICTIONNAIRE DE PHYSIOLOGIE par Charles Richet, Professeur de Physiologie à la Faculté de Médecine de Paris. Premier fascicule du tome III, pp. 320, avec 23 gravures dans le texte. Ancienne Librairie Germer Baillière & Cie., Felix Alcan, Éditeur, Paris. 1898.

The first fascicle of volume three, the seventh fascicle of the work without reference to volumes, contains the concluding pages on the article Cerveau. This article, which comprised all of fascicle six and parts of fascicles five and seven, will be reviewed as a unit in the near future. Owing to another somewhat lengthy monograph, that on Chaleur, fascicle seven contains but few primes. There is but one article of a biographic nature, viz. that on Andrea Cesalpino, who lived from 1519 to 1603 and who is known as a botanist through his essays on the classification of plants and as a physiologist on account of the knowledge he possessed of the circulation of the blood previous to Harvey.

Chemistry comes in for the largest number of primes, viz.: Césium, Cétine, Cétrarine, Chairamine, but all four are of rather minor importance. A physiological fact of considerable interest brought out under cesium is, that whereas its absolute toxicity compared with rubidium and potassium is 100:43:26, the molecular toxicity is expressed by an entirely different ratio, viz.: 0.74:0.51:0.67. Whereas the absolute toxicity of lithium and potassium is about the same, 27:26, their molecular toxicity is 3.9:0.67. It is by means of the figures expressing the molecular toxicity that a better notion concerning the physiological action of these elements is conveyed.

Zoology is represented by a several page article on the Cétacés; botany and pharmacognosy by two articles, a brief notice on Cévadille and the beginning of a lengthy article on Champignons which evidently will be completed in the next fascicle.

An article from the domain of physics, but almost altogether physiological in its aspect is the one hundred and ninety page article on Chaleur. The subject of heat is discussed under three chapters, the first of which treats of the production of heat by living beings. The first sentence, "La partie historique de la chaleur animale se résume en un nom: Lavoisier," and the subsequent proof of the correctness of this assertion is decidedly interesting to the chemist who had not known of Lavoisier's achievements in this direction.

It is true, Paracelsus had long before explained physiological phenomena on a chemical basis, but his chemistry in this particular field was exceedingly rank and often degenerated to no chemistry at all. Lavoisier's explanation of the absorption of oxygen, the expiration of carbon dioxide with the production of heat as a result of this oxidation is as beautiful as it is simple. It shows also what far-reaching conclusions in widely divergent fields of science can be deduced from a few simple experiments if the experimentor is endowed with keen observation and a precision of thought. The second chapter discusses the general biological aspects of the subjeet of heat; the third takes up the action of heat (including cold) upon living beings. Chapters one and three are provided with lengthy bibliographies brought down to include the year 1897.

In every way this fascicle comes up to the earlier ones in quality. The reader cannot help being impressed with the importance of this work. Professor Richet is veritably erecting a lasting monument unto himself as editor of this dictionary. *E. K.*

GRUNDLAGEN FÜR DEN NACHWEIS VON GIFTSTOFFEN bei gerichtlich-chemischen Untersuchungen. Für Chemiker, Pharmazeuten und Mediziner bearbeitet von Dr. Carl Kippenberger, Professor der Chemie, Direktor des chemischen und des toxikologischen Laboratoriums der medizinisch-pharmazeutischen Landeshochschule in Kairo (Egypten). Verlag von Julius Springer, Berlin. Ein Bd., pp. XII, 266. 1897.

In 1895 the author of this treatise, at that time Privatdocent at the Polytechnicum in Zuerich, published in the Zeitschrift für analytische Chemie (p. 294) an article entitled Beiträge zur Reinisolirung, quantitativen Trennung und chemischen Charakteristik von Alkaloiden und glycosidartigen Körpern in forensen Fällen, mit besonderer Rücksicht auf den Nachweis derselben in verwesenden Cadavern. A reprint of this article received wider circulation in the form of a brochure and as such was reviewed in this journal (vol. 14, p. 22). Besides minor improvements in toxicological analysis, the author suggested the use of glycero-tannic acid as a menstruum for extraction. The great advantage claimed for this solvent was that it from the beginning separated the plant alkaloids from those decomposition products of the decaying body which produce similar reactions.

Such a process, if found to stand the test of experience, must naturally prove of the greatest importance in toxicological analysis. Whether the time has been sufficient to bring such proof may still be open to question in the minds of conservative analysts. The method seemed to have many points in its favor and it, therefore, seems fortunate on the whole that the method should have been incorporated in a general system of toxicological analysis. It is in this way that it will be put to a better and more speedy test.

Aside from this new feature, the new treatise does not reveal any radical differences from other works on the same subject with possibly one exception. It is not as skeleton-like as the booklet of Klein and of several other authors, neither is it a voluminous handbook like some of the larger treatises. Besides being a general introduction into the study of toxicological analysis, it is a laboratory guide for the student. It presupposes a fair knowledge of inorganic and organic chemistry, also a practical acquaintance with qualitative and quantitative inorganic analysis.

The book is divided into three large chapters:

A. The examination of volatile poisons, such as phosphorus, hydrocyanic acid, chloroform, chloral hydrate, phenol, etc.

B. The examination of non-volatile organic poisons. Besides the older methods of Dragendorff and Stas-Otto, the more recent ones of Hilger and of the author are discussed, the last one especially in detail. This is followed by the characterization of individual alkaloids. It is to be regretted that a number of new remedies of a basic character as well as others could not have been included. The author, however, promises that, should a second edition of the work become necessary, these will receive consideration.

C. Examination of non-volatile inorganic poisons. The various methods for the destruction of the organic matter are presented and in accordance with the character of the work only a few of the more important metallic poisons are treated individually.

An appended chapter takes up the examination for acids, organic as well as inorganic; another treats of carbon monoxide poisoning; a third and final chapter the recognition of blood stains. The book is provided with both author's and subject index and should receive the early attention of all teachers of toxicological analysis.

E. K.

SCHULE DER PHARMACIE. Herausgegeben von Dr. J. Holfert, Dr. H. Thoms, Dr. E. Mylius, Dr. K. T. Jordan. I, Praktischer Theil. Bearbeitet von Dr. E. Mylius. Zweite verbesserte Auflage. Verlag von Julius Springer, Berlin. 1898. Preis M. 4.00.

The first edition of the Schule der Pharmacie, published in 1893, met with such favor that the edition has become exhausted, necessitating the issuing of a second. The first part of this work, treating of practical pharmacy, has undergone very few changes in the revision, only a few additions and corrections having been made. The work is intended for apothecary apprentices as a text-book and especially as an aid in preparing for the German assistant's examination. By omitting all matter which can be found in the "Arzneibuch" and in other books that the apprentice would have to study anyhow, the subject-matter has been limited to 256 pages, and the price made so low as to place the book within reach of anybody. From this it must not be judged that the book corresponds in any way to our pharmaceutical catechisms or quiz-compends. On the contrary, it is written in a very interesting and readible manner, interspersed with many well-executed illustrations, and the numerous "golden rules" found throughout the work are intended to be observed and to become fixed habits in the pharmacist's work rather than to be memorized. Whether the author's recommendations to commit to memory the German and Latin names of all substances found in an apothecary shop before learning their real nature or composition, and whether his caution against studying any works on science during the three years of apprenticeship will lead to the best results, is open to great doubt. Likewise will his assertion that the study of sciences spoils a person for work at the prescription counter, not find universal acceptance.

The subject-matter of the book is divided into the following parts: selling of drugs, manufacture and storing of various pharmaceutical preparations, compounding of prescriptions, collecting of drugs, and book-keeping. Besides these, discussions of the laws governing pharmacy in Germany are interwoven throughout in such a manner that the student becomes acquainted with them by scarcely any effort. In the treatment of all of these subjects, the author has proved himself a master, and the many practical suggestions given, though intended primarily for beginners, will be of value even to many an older pharmacist. *Richard Fischer.*

REPETITORIUM DER CHEMIE. Mit besonderer Berücksichtigung der für Medizin wichtigen Verbindungen sowie des "Arzneibuches für das Deutsche Reich" und anderer Pharmakopœen, namentlich zum Gebrauche für Mediziner und Pharmazeuten bearbeitet von Dr. Carl Arnold, Professor der Chemie an der Königlichen Tierärztlichen Hochschule zu Hannover. Achte verbesserte und ergänzte Auflage. Ein Bd., pp. XII, 616. Verlag von Leopold Voss, Hamburg. 1898. M. 6.00.

A book that has passed through eight editions in thirteen years is, no doubt, an object of delight to both author and publisher. In case the book belongs to the type of the one before us it seems to indicate that it fills a demand and, therefore, both author and publisher were fully justified in its publication. It is, therefore, with a justifiable pride that both interested parties may look upon their success.

It would be foolish to deny such a feeling or spirit, for this well known repertory has certainly been very serviceable to many a medical and pharmaceutical student preparing for examination. Almost anything and everything that the chemical examiner would be likely to ask of a medical or pharmaceutical candidate is treated in a compendious form in this book of six hundred pages. Besides, that which pertains less to medicine is printed in small type, so that the book in spite of its volume may well serve for rapid review just before examination. As long as examinations will be held, books like the one before us will be written and authors are in large measure justified in writing them.

Several years ago the writer had occasion (Proceedings of the Wisconsin Academy) to analyze the systems of classification upon which some of our best text- and hand-books on chemistry were written. Attention was called to the sins committed in this direction. How these sins beget sins with a vengeance is forcibly demonstrated in some of the most popular repertories. The fact that the one at hand is more pretentious than many of its competitors seems to bring out this fact all the more strikingly.

Professor Arnold's book is not only to serve as a repertory, but is supplied with a detailed index of almost seventy double column pages, so that physicians can use it as a chemical reference work and guide in their every day practice. Special pains have been taken to include the new remedies, even those that are but of an ephemeral

character. In this respect, no doubt, it also supplies a demand. Six marks for a guide through the difficulties of an examination and through the chemical difficulties of a medical practice is certainly killing two flies with one blow and very cheap at that. *E. K.*

KÖHLER'S NEUESTE UND WICHTIGSTE MEDICINAL-PFLANZEN IN NATURGETREUEN ABBILDUNGEN mit kurz erklärendem Texte. Ergänzungsband zu dem in den Jahren 1883—1890 erschienenen Hauptwerke, in 2 Bänden. Herausgegeben von Dr. Max Vogtherr in Gera. Lieferungen XII bis XVI. Druck und Verlag von Fr. Eugen Köhler, Gera-Untermhaus. Lieferung à 1 M.

The new numbers of this valuable work are very gladly received, adding to our resources, as they do, a concise statement of our present knowledge concerning the drugs taken up and what for the student and the teacher is sometimes a still more desirable feature, fine, colored plates illustrating plants often times otherwise at best perhaps poorly figured.

The plates contained in the new numbers figure the following plants: *Aethusa Cynapium* L., *Cuminum Cyminum* L., *Petroselinum sativum* Hoffm., *Macrotomia cephalotes* DC., *Chrysanthemum roseum* Web. and Mohr, *Chrysanthemum Marschallii* Aschers., *Scopolina atropoides* Schultes, *Convolvulus Scammonia* L., *Strychnos Ignatii* Bergius, *Urostigma elasticum* Miq., *Piscidia erythrina* L., *Arachis hypogæa* L., *Santalum album* L., *Gelsemium sempervirens* Aiton, *Citrus Bergamia* Risso, *Anacardium occidentale* L., and *Sesamum indicum* DC. The quality of these plates is very high and the accompanying text is very satisfactory.

Although in the prospectus of this work it was stated that the volume would be complete in about fifteen numbers, it is a cause of satisfaction to note that Number sixteen has come and the end is not yet. It would be very desirable if the scope of the work could be widened and made to include a larger number of our American plants furnishing official drugs, of which at present we have either no illustrations or only very unadequate ones. These are frequently quite as little known as drug plants living in more remote parts of the earth. *Rodney H. True.*

Pharmaceutical Review.

VOLUME 16. APRIL, 1898. NUMBER 4.

Editorial.

Pharmacy has, as a rule, been subordinated officially to other professions. Not only has she for a long time been considered the hand-maid of medicine, but she has been superintended officially, in Germany and other countries, by members of the medical profession. Even in this country, where pharmacy has, on the whole, enjoyed a more independent position, the medical profession is here and there represented in boards of pharmacy, whereas it may be safely asserted that pharmacists have never been members of medical examining boards, unless they were also practicing physicians. Not infrequently members of the legal fraternity in official position have been permitted to exercise more or less control over matters pharmaceutical of which they had exceedingly meagre knowledge. Of recent years food and dairy commissioners have been given more or less control over the purity of drugs and the sale of poisons.

Thanks to the *laisser faire* policy so long popular in this country, pharmacists have for a long time been left to themselves. Even in educational matters they had to work out their own salvation unsupported and even ignored by the larger educational institutions. As a result, pharmacists were largely permitted to control their own affairs. This independence asserted itself in various ways. One good result has been, e. g., the successful battle fought for equal recognition with the medical profession in the revision of the Pharmacopœia. That this has been fought with exceedingly satisfactory results, no one who has compared the various editions of our national standard will deny. In legislative matters, however, and in matters of inspection and control, pharmacists have not kept pace with the demands of the time. The result has been that the practice of pharmacy in some of its aspects has been brought under the jurisdiction of food and dairy commissions. However desirable the pure food and

drug laws may be for the public, and consequently perfectly justifiable, from the standpoint of pharmaceutical self-government they are a decided set-back.

In conservative Germany, where for centuries pharmacy has had next to nothing to say as to the regulation of its own cal ing, a decided theoretical step in advance was taken somewhat more than a year ago in the establishment of an Apothekerrath.' Whether the advance will prove a practical gain will depend in part on the men constituting this council, in part on the scope of influence granted the council by the government. An incident that has attracted next to no attention but which, if properly used, may prove an entering wedge for further concessions in the direction of self-government, was the appointment of a pharmaceutical assessor in Hamburg with practically the same salary as the two city physicians. In this country pharmacy has thus far received no recognition whatever in the composition of boards of health. For the present the energies of the American Pharmaceutical Association are directed to securing better representation for pharmacists in the army and navy.

In this work our association has received about the same reply that the Germans received from their government in their attempt to improve the status of the hospital apothecary, viz. that the government can get all the apothecaries it is in need of and that those employed are good enough. Attention has been called to the fact that whenever the government considers it desirable to improve the status of any class of officials it does not consider such arguments as valid. If they were valid, why not offer the position of government apothecaries, in fact all government positions, to the lowest bidder. Such a regulation would not exclude educational qualifications on the part of the applicants. The fact, however, is that every civilized government considers it better economy on the long run to act according to the biblical maxim "The laborer is worthy of his hire."

For several years there has been in operation in Germany a law necessitating the registration of trade-marks. In this country apparently almost anything and everything can be registered as a trade-mark. Whether it is really valid as a trade-mark may or may not be decided later by the courts. As a result we have on the whole an exceedingly vague and confused notion as to the character and significance of trade-marks. In Germany, on the other hand, it does

not appear to be so easy to secure the registration of any and every word as trade-mark. Thus e. g. the imperial patent office has recently refused the registration of the name "Liebreich" as trade-mark. The argument for refusal states that "Liebreich is the name of a well-known professor of pharmacology at the University of Berlin, who has discovered numerous new remedies and made them available to commerce. As a consequence many purchasers who know the name of Liebreich may be led to suppose that the remedy in question has either been discovered by Liebreich or has been recommended by him. Inasmuch as this is not the case, the trade-mark (Liebreich) may be the cause of deception." For this reason the registration was refused. Somewhat earlier the indiscriminate use of the name of Pasteur for similar purposes was prohibited in France.

There has been a great ado of late in the daily press as well as in professional journals about the practice of Christian science. The substitution of the methods Christian science for legitimate medical practice has been denounced as criminal and the decision of a Pennsylvania judge forbidding such infringement of the medical practice as unlawful, has been received with delight by the medical press. Whereas the decision of the Pennsylvania judge must impress even those without legal training as good law and therefore highly commendable, it would have redounded to the credit of a number of medical editors had they studied more carefully the tone in which the decision was rendered.

To thinking persons it must appear somewhat strange that a practice which has been tolerated for centuries should suddenly be branded as criminal. Travellers of southern Europe, no doubt, have seen shrines decorated with models of the human body or its parts. The object of these models is too well known to require further comment. But one need not go to Europe in order to study the practice of faith-cure. It has been practiced and is being practiced daily in this country without being molested by the courts or denounced criminal by medical editors. It is not only practiced under this name, but under the disguise of long tolerated religious ceremonies. All of this, however, does not justify Christian scientists in permitting children to die of diphtheria without medical assistance. But it ought to cause medical editors to reflect for a moment before writing fiery editorials. *E. K.*

On the Volumetric Estimation of Methyl Salicylate.

By *Edward Kremers* and *Martha M. James.*

(Report of Research-Committee *G*, U. S. P. Revision.)

At the White Mountain Meeting of the American Pharmaceutical Association in 1892, B. H. Ewing[1] read a paper on the Application of volumetric analysis to oil of wintergreen. Under the direction of Wm. Simonson, he tested the application of the gravimetric and volumetric analysis of salicylic acid to an assay of methyl salicylate.

1.5 to 2 gm. of the oil are, with due caution, dissolved in a slight excess of strong soda solution and then saponified. The saponified liquid, transferred to a separatory funnel, is acidulated with hydrochloric acid and the precipitated salicylic acid is shaken out with several quantities of ether. Any traces of sodium chloride in the ether are removed by shaking it out with water. The washed ethereal solution is evaporated in a tared dish and the salicylic acid weighed.

For the volumetric estimation, 5 gm. of oil are dissolved in 40 cc. of "volumetric solution of soda" and the solution boiled for five minutes to effect saponification. The excess of soda solution is ascertained with the aid of $\frac{N}{1}$ HCl V. S. and the number of ccs. of $\frac{N}{1}$ NaOH V. S. consumed in the saponification multiplied by 0.152, the methyl salicylate factor.

The results obtained by both processes agree well as shown by the assay of three samples: I—98.65 p. c. and 99.30 p. c.; II—99.72 p. c. and 99.40 p. c.; III—99.85 p. c. and 99.30 p. c. The first figure in each case is the result obtained by the gravimetric method, the second that obtained by the volumetric method. Judging from the statement that Mr. Simonson verified each estimation made by the author, one is led to conclude that these figures in each case represent average results of at least two experiments. The variations in the results of different experiments are not given. Definite information on this point would have been desirable.

The volumetric method was put to a test with a slight modification. Potassium hydroxide was used in place of the sodium hydrox-

[1] Proc. A. Ph. A., 40, p. 196.

ide because of the much greater solubility of the potassium compound of methyl salicylate. $C_6H_4(OK)COOCH_3$. Instead of weighing out just five grams, a convenient quantity, varying from two to five grams, was accurately weighed.. After multiplying the methyl salicylate factor by the number of ccs. of $\frac{N}{1}$KOH V. S. consumed in the saponification, the amount of methyl salicylate in grams thus obtained can readily be divided by the number of grams of oil used and the resultant multiplied by one hundred to obtain the parts per hundred. It was considered more satisfactory on the whole to make the additional division than to go to the trouble of weighing out just five grams.

The results obtained with quantities of oil varying from two to five grams were 99.83 p. c.; 99.89 p. c.; 99.98 p. c.; 99.84 p. c.; 99.85 p. c.; 99.61 p. c.; 99.91 p. c. In one or two instances errors in manipulation caused a deviation in the result of about one and one-half percent. Such errors even of persons not expert are readily controlled by duplicate tests. The greatest danger in volumetric work of any kind seems to lie in the use of burettes not accurately calibrated. The results above quoted were obtained with burettes recalibrated.

In an article entitled Ueber eine neue Körperklasse von jodirten Phenolen, Messinger and Vortmann[2] in 1889 described a number of iodine derivatives of phenols, among them diiodo salicylic acid. They state that the phenols are precipitated almost entirely from their alkaline solutions by iodine and that these compounds may possibly serve for the quantitative estimation of phenols.

When iodine is added to an alkaline solution of salicylic acid, a dark red, pulverulent precipitate is formed which is the alkali salt of a diiodo salicylic acid of the following composition: $C_6H_3I(OI)COOM'$. The free acid can be obtained as a bright red powder by digesting the salt with an acid. If, however, the potassium salt is heated with potassium hydroxide, it behaves like diiodo phenoliodide and most of it goes into solution. If the alkaline solution is acidulated, a white crystalline compound is precipitated which melts at 165°.[3]

In the following year, 1890, Messinger and Vortmann[4] contribute a paper on the Maasanalytische Bestimmung der Phenole,

[2] Ber. 22, p. 2312.

[3] M. and V. state that this compound is very likely identical with the already known diiodo salicylic acid. Beilstein, (3rd ed.), II, p. 1507, however, gives the melting point of the 3.5-diiodo salicylic acid, the only one mentioned, as 220—230°.

[4] Berichte, 23, p. 2753.

which includes phenol, thymol, naphtol and salicylic acid. The directions given for the estimation of salicylic acid are as follows: To one molecule of acid at least four molecules of sodium hydroxide must be employed. If to the alkaline solution at a temperature of 50 to 60° $\frac{N}{10}$ Iodine V. S. is added, no precipitate should form at once. After an excess of the iodine solution has been added and the solution has been slightly warmed, a bright red precipitate is found, the amount of which is increased upon acidulation. If the amount of alkali has not been sufficient, a yellow precipitate is formed before an excess of iodine has been added. In this case enough alkali is added to bring it into solution and the addition of iodine is continued.

The directions for the titration are as follows: 2—3 g. of the acid are dissolved in soda solution so that at least four molecules of soda are present for each molecule of acid. The solution is diluted to 250 or 500 ccm. of this solution 5 or 10 ccm. (measured accurately) are transferred to a flask and heated to about 60°. Sufficient $\frac{N}{10}$ iodine V. S. is then added to impart to the solution a decided yellow color due to the excess of iodine. Upon shaking, a deep red precipitate results. Upon cooling the solution is acidulated with dilute sulphuric acid and subsequently diluted to 250 or 500 ccm. In an aliquot part of the filtrate (about 100 ccm.) the excess of iodine is determined by means of $\frac{N}{10}$ thiosulphate V. S.

The factor is derived in the following manner:

$$\frac{1 \text{ mol. salicylic ac.}}{6 \text{ atoms iodine}} = \frac{137.67}{759.24} = 0.18132606.$$

By multiplying the amount of iodine consumed by this factor the amount of salicylic acid is determined. Or if f = the factor and t = the titre of the iodine solution the product f.t is the amount of acid equivalent to one ccm. of the iodine solution.

Inasmuch as an alkaline solution of salicylic acid results readily upon saponification of methyl salicylate, this process should be equally applicable to the assay of the ester.

Methyl salicylate is saponified as in the alkalimetric process, care being taken to use at least seven molecules of potassium hydroxide to one molecule of ester. One molecule of the alkali being required for saponification this leaves at least six molecules as required by Messinger and Vortmann. In one instance 5.4998 grams methyl salicylate were dissolved in the required amount of soda solution,

saponification effected and the saponified solution after cooling was diluted to 500 cc. Of this solution exactly 10 cc. were heated as directed and 53.6263[5] cc. of $\frac{N}{10}$ iodine V. S. added and the solution was shaken and diluted to 500 cc. One hundred cc. of the filtrate required 2.0919[5] cc. $\frac{N}{10}$ thiosulphate V. S. to remove the excess of iodine. One-fifth of the total quantity of iodine solution used is 10.72526 cc. The amount of iodine actually consumed in ⅕ of the experiment is 8.63336 cc. This number multiplied by 0.631825 [$\frac{1}{50} \times \frac{1}{5} \times 0.0025273$ (the methyl salicylate factor for $\frac{N}{10}$ iodine V. S.)] will give the amount of methyl salicylate viz. 5.4649 or 99.17 p. c. indicated by this experiment.

$$\text{Or, } \underbrace{C_6H_4(OH)COOCH_3}_{151.64} : \underbrace{6I}_{759.18} = \chi : \underbrace{\text{Total am't of I consumed}}_{8.63336 \times 250 \times 0.012653.}$$

$$\chi = 5.456333 \text{ or } 99.2 \text{ p. c.}$$

Now to multiply by 151.64 and to divide the resultant by 759.18 gives the same result as to multiply by 0.19974314.

$$\frac{1 \text{ mol. methyl salicylate}}{6 \text{ atoms iodine}} = \frac{151.64}{759.18}^{6} = 0.19974314.$$

A number of determinations according to this method were made with the same oil, using about 3 grams for a weighing. The following percentage results were obtained: 99.1; 99.1; 98.7; 99.3; 99.8; 99.7. The last three results show that after a little experience satisfactory results can be obtained.

Popular Scandinavian Names of Drugs and Medicines.*

By *Harold Bruun.*

Barnepulver.

Magnesium carbonate	1
Oleosaccharate of fennel	1
Rhubarb, powd	1

Blodgjörende Urter.

Chamomile flowers	10
Elder flowers	10
Malva	10
Melilot	10
Althea	10
Linseed	50

Brusepulver.

Sodium bicarbonate.....2.00 gms.
(In blue paper.)
Tartaric acid.....1.50 gms.
(In white paper.)

5 This fraction is due to correction for factor.
6 The U. S. P. atomic weight for iodine × 6.
* Copyrighted. Concluded from p. 56.

Brystdraaber.

Extract of licorice, pure	20
Fennel water	60
Anisated spirits of ammonia	20

Brystthe.

Anise seed	10
Elder flowers	15
Mullein	15
Coltsfoot	15
Licorice root	15
Althea	30

Camphormixtur.

Camphor, powd	1
Mucilage of acacia	9
Raspberry syrup	10
Water	80

Sur Camphormixtur.

Acetic acid	1
Camphor mixture	99

Decoct China.

Calisaya bark	10
Boiling water, a sufficient quantity to make	100

Decoct China, sur.

Decoction of calisaya	10
Sulphuric acid, dil	1

Elixir antasthmaticum Aaskovi.

Alkannet	5
Digitalis leaves	10
Licorice root	20
Fennel water	50
Dilute alcohol	50

Maximum dose 30 drops.

Hjortetakdraaber.

Succinic acid	10
Water	80

Ammonium carbonate, a sufficient quantity for saturation.

Haller's sure Draaber.

Alcohol	50
Sulphuric acid	50

Hoffmannsdraaber, röde.

Oil of amber, rectified	2
Oil of cloves	4
Oil of cinnamon	4
Oil of lavender	4
Oil of mace	4
Balsam Peru	6
Alkannet root	6
Alcohol	970

Hvid Camphorolje.

Camphorated oil	1
Lard oil	1
Ammonia water	1

Kjölende Pulver.

Oleosaccharate of lemon	1
Potassium nitrate	1
Potassium bicarbonate	6

Kongesalve, sort.

Turpentine, Venice	12
Yellow wax	12
Tar	12
Colophonium	12
Suet	12
Olive oil	40

Krampedraaber.

Hjortetak draaber	1
Hoffmanns anodyne	1

Moderdraaber.

Tincture of asafetida	10
Tincture of castoria	1
Camphorated Hoffmann's anodyne	1

Opodeldok.

Casti'e soap	8
Camphor	2
Alcohol	84
Ammonia water	4
Oil of rosemary	1
Oil of thyme	1

Opodeldok, flydende.

Soap liniment	97
Ammonia water	3

Rhabarberdraaber, Ph. N.

Rhubarb	25
Sodium bicarbonate	3
Water	200

Macerate for 12 hours, strain, and to 170 parts add 30 parts of cinnamon water.

Enebaerthe.

Anise seed, crushed	10
Licorice root, cut	10
Juniper berries, crushed	80

Hamburgthe.

Senna leaves, cut	8
Manna	3
Coriander seed, crushed	1
Cream of tartar	1

Bitter The.

Guaiac wood	25
Juniper berries	25
Buckbean leaves	25
Senna leaves	25

Gummi Plaster.

Lead plaster	70
Yellow wax	12
Ammoniac	6
Galbanum	6
Turpentine, Venice	6
Alcohol, dilute	3

Mould into sticks about 4 in. long.

Sur Mixtur (Mixtura acida).

Sulphuric acid, dil	2
Water	80
Raspberry syrup	18

Liquor supercarbonatis ammoniaci pyrolosi.

Ammonium carbonate with Dippel's oil	1
Water	6

Koppesalve.

Tartrate of antimony and potassium	20
Lard	80

Laebepomade.

Yellow wax	20
Spermaceti	30
Oil of sweet almonds	50
Alkannet root	10
Oil of bergamot	1

Cut into small squares.

Laudanum (Vinum opii crocatum)

Opium	15
Ceylon cinnamon	1
Cloves	1
Spanish saffron	5
Malaga wine	150

Maximum dose 30 drops.

Fordelende Urter.

Wormwood	20
Melissa	20
Peppermint	20
Origanum	20
Chamomile flowers	8
Lavender	8
Elder flowers	4

Spiritus Ammoniæ Anisatus.

Oil of anise	25
Alcohol	800
Ammonia water	175

Early Phases in the Development of Pharmaceutical Legislation in Wisconsin.*

By *Edward Kremers.*

Before taking up this meeting, which was held Sunday afternoon, Jan. 23, at the house of Mr. Otto A. Thiele, it will be of interest to learn something more about the draft to which those druggists objected. It is not be expected that a city attorney who possibly never had anything to do with pharmaceutical legislation would draft a bill without any assistance. Whence came this assistance and what was its nature. Judge Wallber, who at that time was City Attorney, has informed the writer that he could not remember anything about the drafting of the bill. For a time it seemed as though no clue could be found.

However, among the documents recently found at the City Clerk's office there is one which seems to throw some light on the question. The document in question is a copy of a pharmacy act of New Hampshire and is written on letterheads of Schorse & Co. It is of sufficient interest in this connection to warrant reproduction.

In order to facilitate a comparison between document 27, the draft of the city attorney, and document 31, the New Hampshire law, two sections of each are placed in opposition in the double column below. In as much as chapter XIII of chapter 184 of the laws of

* Continued from p. 65.

1894 already contained seventeen sections, section one of the New Hampshire law became section eighteen of the City Attorney's draft.

From *Document 27.*

SEC. 18.

Proprietor, agent, assistant or clerk, without having first obtained a certificate of qualification and competency therefore from the commissioners to be appointed under the provisions of the succeeding sections.

SEC. 19.

On the first Monday of May, A. D. 1876, the Mayor of said city, with the approval of the Common Council, shall appoint three persons competent to perform the duties herein imposed upon them, who shall be styled "The Commission of Pharmacy and Practical Chemistry of the city of Milwaukee," one of whom shall hold his office for one year, one for two years and the third for three years, and each until his successor is appointed and qualified, etc.

From *Document 31.*

SEC. 1.

Proprietor, agent or assistant without having first obtained a certificate of qualification and competency for such business, from the commissioners to be appointed under the provisions of this act.

SEC. 2.

The Governor with advice of the Council shall forthwith appoint three Persons competent to perform the duties herein imposed upon them, who shall be styled the Commission of Pharmacy and Practical Chemistry, one of whom shall hold his office one year, one two years, and the third three years and each until his successor is appointed and qualified, etc.

From the above illustrations it becomes apparent beyond reasonable doubt that one document is an adaptation of the other. The number of illustrations can easily be multiplied by the reader by carefully comparing the two documents. To this internal evidence should be added that Mr. Schorse and Mr. Wallber were well aquainted at that time. Further, that Mr. Schorse accompanied the writer to the City Hall and inspected the document and recognized it as having been copied by himself.

One of the principle reasons why the druggists objected to this draft is to be found in section 19. It was feared that the appointments of the mayor with the approval of the common council might smack too much of ward politics. Besides the proposed composition of the commission, viz. two physicians and one apothecary, must have displeased the druggists very much. This displeasure found expression

in an article in the Sunday Herold. [*Document 32.*] The space given to the discussion of the entire movement in the newspapers, especially in the German papers, demonstrates clearly that the regulation of the practice of pharmacy was considered as a matter of some public import and not a matter of mere class legislation.

Document 31.

Copy of a Pharmacy Act in New Hampshire.

An act to prevent incompetent persons from conducting the business of Druggists and Apothecaries in this State.

Be it enacted by the Senate and House of Representatives in General Court convened:

SECTION 1. That, hereafter, no person shall conduct or keep a shop of any kind in this State for the purpose of retailing Drugs, Medicines, or such chemicals as are used in compounding medicines, or engage in the business of compounding and putting up prescriptions of Physicians, and vending Medicines, either as proprietor, agent, or assistant, without having first obtained a certificate of qualification and competency for such business, from the Commissioners to be appointed under the provisions of this act; provided it shall be lawful for any person to sell proprietary Medicines.

SECTION 2. The Governor with advice of the Council, shall forthwith appoint three Persons competent to perform the duties herein imposed upon them, who shall be styled the Commission of Pharmacy and Practical Chemistry, one of whom shall hold his office one year, one two years, and the third three years, and each until his successor is appointed and qualified; and [that]* at or before the expiration of the term of office of each person so appointed, the Governor in like manner shall appoint a like person to said office, who shall hold his office for three years, or until his successor is appointed and qualified. In case a vacancy in said commission shall occur at any time from any cause, the Governor with advice of the council, shall appoint a competent person to fill said vacancy for the unexpired part of the term of office of the person causing such vacancy.

Before entering upon the duti s of his office, each commissioner shall be sworn to faithfully and impartially discharge the duties of his office, and the record thereof shall be made on his commission; it shall be the duty of the Commissioners appointed, as aforesaid, to examine all persons who shall desire to engage in the business of Apothecaries and Druggists, and if found skilled and learned in Pharmacy, they shall give such persons certificates, signed by at least two of said commissioners and shall state therein, that the person to whom the [said]* same is issued is a skilled Pharmaceutist, and authorized to engage in the business of an Apothecary and Druggist.

SECTION 3. The said commissioners shall procure and keep a suitable book, at the office of the Secretary of State (*City Clk.*)† at [Madison, Wis.]*

Concord, N. H., wherein they shall register the names and places of residence of all persons to whom they shall issue said certificates after an examination and the date thereof, names, and places of residence of all persons engaged in conducting the business of apothecaries for themselves and others, in this State, six months previous to the passage of this act upon application therefore; and it shall be the duty of all such persons engaged as aforesaid, to furnish the Commissioners of Registration satisfactory evidence that they are engaged [with]* in such business, within sixty days after they shall have been notified by a circular letter from the commissioners of the time and place of registration, and said commissioners shall hold at least three sessions within said sixty days, for such as have been engaged in the business as aforesaid. In case of failure or neglect to be registered by any person or persons so engaged in said business within the said 60 days, such person or persons shall thereafter [to]* procure a certificate [on] by examination. Said book wherein the Registration is made as aforesaid, shall be at all reasonable time open to the examination of all persons.

SECTION 4. Said Commissioners shall be (*each wk. 5 each*)† entitled to demand and receive from any applicant for examination, (*whether or not*)† to whom a certificate shall be granted as aforesaid, the sum of five Dollars, and for the notice and registration of each person now engaged in the business of an Apothecary, the sum of two Dollars, and the money so received shall be in full payment for the services and expenses of said commissioners.

SECTION 5. All pharmacists that shall hereafter be registered according to the provisions of this act are hereby authorized to keep Spiritious Liquors for compounding their Medicines.

SECTION 6. [After]* If any person shall engage in the business of retailing and vending, directly or indirectly, Drugs, Medicines and Chemicals and (*or*) in dispensing Medicines, and (*or*)† compounding Physicians Prescriptions, contrary to the provisions of this act, every such person shall be liable to a fine not exceeding fifty Dollars for each and every week, such person shall continue in said business without being registered as provided by this act, [with]* which fine may be recovered by an action of debt for the use of any person who shall sue therefor, or by an indictment.

SECTION 7. The provisions of this act shall not be so constructed as to apply to physicians compounding and putting up their own prescriptions.

SECTION 8. This act shall take effect from and after its passage.

Document 32. [*Herold*, Jan. 23 '76, p. 142, col. 2.]

Unsere Pharmaceuten

sind mit dem durch den Stadtanwalt dem Common Council vorgeschlagenen Amendement zum Stadtcharter, das Apothekergeschäft betreffend, nicht zu-

* Stricken out with pen and ink, evidently by copyist.
† Added with lead pencil, probably by City Attorney.

frieden. Auch ist diese Vorlage vom Council bis jetzt noch nicht acceptirt, sondern zur weiteren Erwägung zurückgelegt worden. Namentlich die Bestimmung in dieser Vorlage, wonach der Mayor die Prüfungs-Commission, bestehend aus drei Mitgliedern von hiesigen Aerzten und "Drougisten", zu ernennen haben soll, hat bei den eigentlichen Pharmazeuten und Apothekern entschiedene Missbilligung gefunden. Sintemalen dabei gar keine Sicherheit gegen ist, dass diese vom Mayor ernannten Examinatoren selbst wirklich tüchtige Aerzte und Pharmaceuten sind.

Es haben sich nun die hiesigen Apotheker und Pharmaceuten, welche in ihrem Geschäft ebenso theoretisch wissenschaftlich wie praktisch ausgebildet sind, entschlossen, dem Common Council in seiner Sitzung morgen Nachmittag ein anderes Amendment zum Stadtcharter vorzulegen, welches dem Zeitbedürfniss und den Anforderungen des Publikums wirklich entspricht. —

Heute Nachmittag findet deshalb Versammlung in Hrn. Otto Thiele's Apotheke an der Dritten Strasse statt und wird diese dem Common Council zu machende Vorlage dort berathen werden.

Es ist diese Angelegenheit schon früher in den Zeitungen, namentlich auch im "Herold" vielfach und eingehend besprochen worden und das Publikum ist jedenfalls über den Zweck dieser "Bewegung" genügend unterrichtet. — Es handelt sich dabei namentlich um den Schutz des Publikums gegen die unheilvollen Schäden und Nachtheile, welche leider nur zu häufig durch die Unkenntniss und den unverantwortlichen Leichtsinn, womit hierzulande von vielen Leuten die "Apothekerei" betrieben wird, entstehen. Dass solche Schutzmassregeln dringend nothwendig sind, hat die Erfahrung aller Zeiten genügend bewiesen und namentlich hier zu Lande ereignen sich fast täglich Fälle, welche diese Erfahrung leider eindringlich genug bestätigen.

Die "Apothekerei" ist nicht ein blosses Gewerbe oder Geschäft, das irgend Jemand der das nöthige "Kapital" besitzt, betreiben kann. Sondern es erfordert sehr viel wissenschaftliche Kenntniss und bedeutende praktische Uebung und Erfahrung, wenn es zum Nutzen und Besten und nicht zum Schaden des Publikums betrieben werden soll. Es wird sich also darum handeln, diese Apothekerei und den Droguen-Verkauf überhaupt unter eine geeignete Controlle zu stellen.

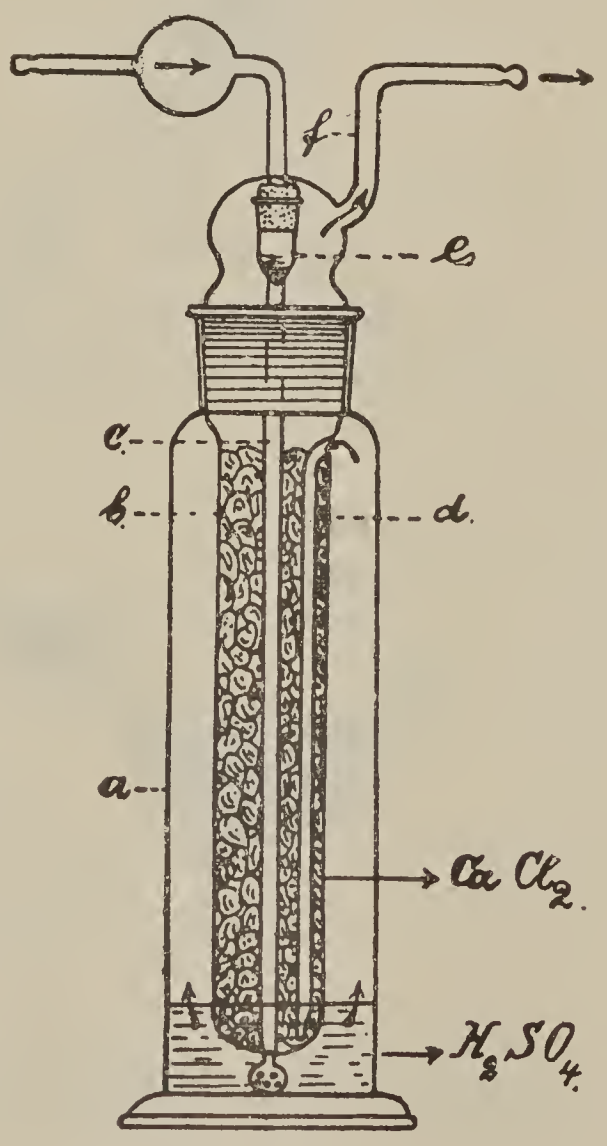
Verfälschung, Verschlechterung von Droguen, leichtsinnige unachtsame Bereitung von ärztlichen "Recepten" sowie der "unverantwortliche" Verkauf von Giften u. s. w. — Alles das muss möglichst durch gesetzliche Regulirung des "Geschäfts" verhindert werden, — zum Besten des Publikums. Es wird erforderlich sein, für eine Prüfungsbehörde zu sorgen, von der sich Pharmazeuten das Zeugniss ihrer Befähigung zur Betreibung der Apothekerei ausstellen zu lassen haben, wenn sie nicht bereits sonstige Zeugnisse von hiesigen oder auswärtigen "Fakultäten" aufweisen können. Auch das "Lehrlingswesen" wird durch geeignete Bestimmungen zu reguliren sein,

sodass Niemand als selbstständiger Gehülfe (Provisor) in einer Apotheke fungiren darf, wenn er nicht eine gewisse Lehrzeit durchgemacht und ein Zeugniss seiner Befähigung erhalten hat. Für gehörige Registrirung der hier bestehenden und etwa neu zu errichtenden Apotheken wird ebenfalls zu sorgen sein u. s. f. Das alles werden unsere Herrn Pharmaceuten gebührend in Betracht ziehen und die Vorlage, welche sie morgen dem Common Council machen werden, wird, wie schon bemerkt, ohne Zweifel allen gebührenden Anforderungen gehörig Rechnung tragen. Die bereits hier bestehenden Apotheken und Druggeschäfte werden natürlich gern mit solchen Schutzmassregeln, die ihnen selbst zum Nutzen gereichen, einverstanden sein.

MONTHLY REVIEW.

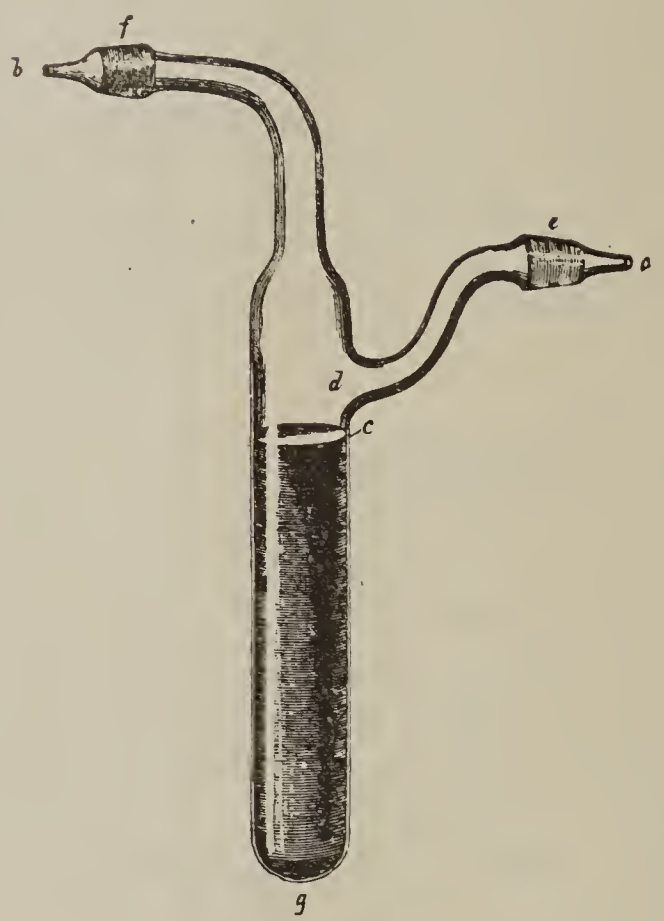
Pharmaceutical Technique.

A New Flask for Washing and Drying Gases.—Paul Fuchs describes a new flask for washing and drying gases in which the gas is exposed to a much greater surface of the drying agent or washing liquid than it is in the ordinary washing bottle. It consists essentially of a cylinder *a* into which is ground a glass tube *b* reaching almost to the bottom. The tube *c*, which conducts the gas into the apparatus is fused into *b* and ends in a small perforated bulb. This last is very advantageous as the gas is thereby divided into small bubbles and so comes into closer contact with the liquid. Beneath the ground portion of the tube *b* there is fused into it the tube *d* which reaches nearly to the bottom of *b*. The interior of *b* can be filled with a second drying agent or washing liquid through the tube *d*. The direction of the flow of the gas through the apparatus is indicated in the figure by arrows. The substances in *a* and *b* may be of an entirely different character, for instance, for drying gases, the outer cylinder may contain H_2SO_4, while the inner is filled with $CaCl_2$ or if the gas is to be purified by passing through two



different solutions, the outer cylinder *a* may be filled with one of the solutions and the inner tube *b* with the other.

[Ztsch. f. angew. Chem. 1898, p. 77.] *Oswald Schreiner.*



A Small Wash Bottle.*—It often happens in chemical laboratories that precipitates are to be washed or dissolved on the filter by a large variety of solvents, and it is always more or less inconvenient to have a large wash bottle of each of these solvents on hand. Jos. Loczka obviates this difficulty by using the small apparatus shown in the figure. The tube is filled with the liquid by immersing the point *b* in the liquid and applying suction to the point *a* until the liquid has risen to about *c*. The liquid may be boiled in the tube when a hot solvent is required. By tilting the tube the liquid flows out in drops from *b*, but a fine stream can be obtained by blowing into the tube at *a*. When not in use, the liquid is prevented from evoporating by ground caps at *e* and *f*.

[Ztsch. f. anal. Chem. 1898. p. 28.] *Oswald Schreiner.*

Evaporating Funnel.—The piece of apparatus shown in the accompanying figures is used by S. Bosujakovic for precipitating and collecting the

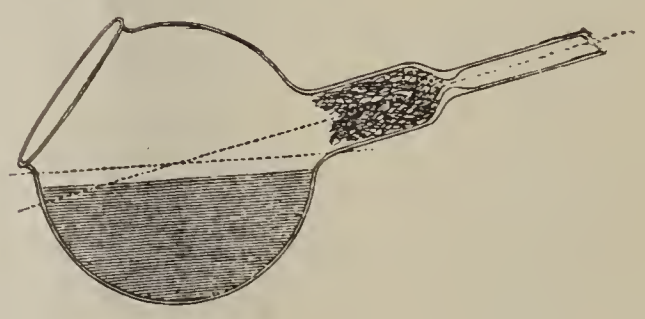


Fig. 1.

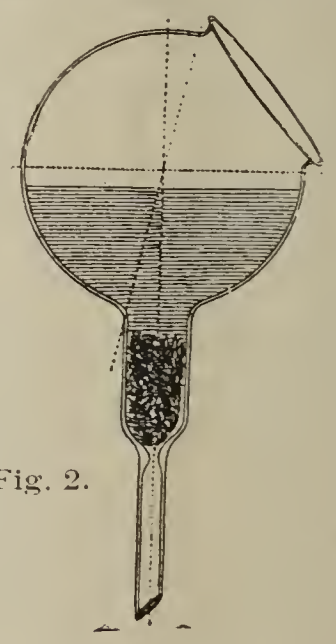


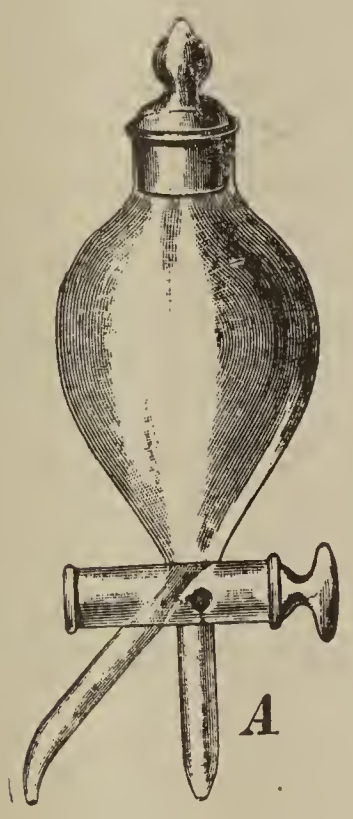
Fig. 2.

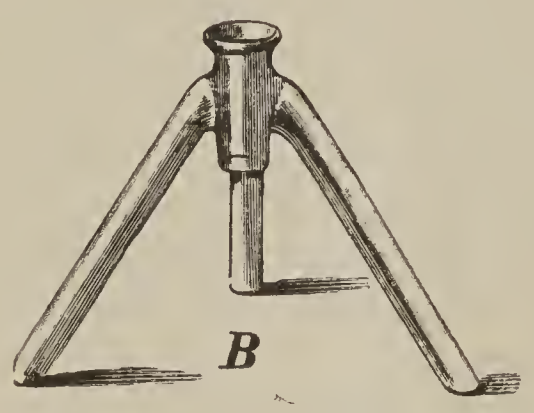
*) This wash bottle is made by Dr. Karl Kiss "Glastechnisches Laboratorium" in Budapest, Esterházy-Gasse No. 1.

precipitate in the same apparatus by filtering through asbestos or glass wool. It can also be used for collecting and weighing the residue left by evaporation. The apparatus saves the trouble and loss occasioned in transferring from a vessel to a funnel. Fig. 1 shows the funnel in position for use as an evaporating dish; in fig. 2 it is in position for use as a funnel.

[Ztsch. f. anal. Chem. 1898, p. 30.] *Oswald Schreimer.*

A New Separating Funnel. — For use in forensic chemical analysis E. Spaeth has constructed a new separating funnel with stand as shown in the accompanying cuts. The funnel is provided with a two-way stop cock which enables a complete separation of the two immiscible liquids, one of





the tubes in the stopcock being used for the lower, the other for the upper liquid. A special advantage claimed for the stand is that it enables the placing of the funnel in a drying oven or closed water bath when amyl alcohol or chloroform are used. Gentle heat is said to readily effect a complete separation of these solvents from the aqueous solution.

[Parm. Ztg. 1898, p. 162; from Ztsch. f. Unters. d. Nahrungsm. etc., 1898, 2.] *E. K.*

Chemistry.

The Chemical Nature of Diastase, by Thomas B. Aborne. Berichte, 31, p. 254. A reply to Wróblewski's articles in the Berichte, 30, p. 2289 and the Zeitschr. f. physiol. Chem. 24, p. 173.

Alcoholic Fermentation Without Yeast Cells.—E. Schmuck calls attention to the fact that in 1853 he succeeded in the alcoholic fermentation of sugar with the erythrozym, the unorganized ferment from the madder. Viewed from

the standpoint of Liebig's theory of fermentation this was not striking. The author hopes to repeat his experiment with the necessary precautions, making certain the exclusion of organized ferments.

[Berichte, 31, p. 309.] *E. K.*

Further reports concerning the proteolytic enzyme which dissolves albumen, and the zymase which produces alcoholic fermentation have appeared in a recent number of the Reports of the German Chemical Society, viz.:

The Proteolytic Enzyme of Yeast Juice, by M. Hahn;

The Detection of Proteolytic Enzyme from Yeast Juice, by S. Geret and M. Hahn; and

Alcoholic Fermentation Without Yeast Cells, by E. Buchner and R. Rapp. The last article contains the results of quantitative experiments concerning the ferment action of the zymase under various conditions. Two of the three articles contain replies to other investigators.

[Bericht 31, pp. 200, 202 and 209.] *E. K.*

Albumoses.—The u ual method of determining the amount of albumoses in meat preparations by precipitating with ammonium sulphate has many disadvantages in the course of the subsequent operations, especially when the amount of nitrogen in the precipitate is ascertained by Kjeldahl's process. Bömer has previously suggested zinc sulphate for the purpose, and Baumann and Bömer now find that the use of zinc sulphate is in every way more advantageons and quite as efficacious for complete precipitation of the albumoses; moreover, the subsequent separation of peptones, meat extractives and ammonium salts can be accurately carried out by precipitation in the filtrate with phospho sodic tungstate in the usual manner.

[Pharm. Journ., 1898, p. 183; from Zeitsch. f. Unters. d. Nahr. u. Genussmittel, 1898, p. 106.] *E. K.*

On the Chemical Composition of Woolfat.— Darmstaedter and Lifschuetz have just published a fifth contribution on this subject. Whereas the woolfat wax consisted of as much as 65 p. c. acids, the "soft fat" contains not more than 40—45 p. c. The lauocerinic acid and the lanopalminic acid which are so characteristic of the wax, do not at all occur in the soft fat. This is characterized by a large percentage of an oily acid, about 40 p. c. of the total acids. Both wax and soft fat contain myristinic and caranauba acid. The alcoholic portion (55—60 p. c) of the soft fat seems to contain carnaubylic and cerylic alcohol and is characterized by a considerable percentage of isocholesterin which does not occur in the wax. On the other hand the cholesterin which occurs in the wax seems to be entirely wanting in the soft fat. [Berichte, 31, p. 97.] *E. K.*

Occurence of Choline and Trigonelline in Strophanthus-Seeds.—The seeds of *Strophanthus hispidus* D. C. yields the Iné-arrowpoison of West Africa,

those of *S. Kombé* Oliv., the Kombé-arrowpoison of East Africa, those of a variety growing between Sansibar and Somalil the Wanika-poison. The first information regarding these arrow poisons was brought to Europe by Livingstone in the early sixties. Attempts to use strophanthus therapeutically in place of digitalis occured about the same time, but it was not until the early eighties that English drug-merchants succeeded in importing larger quantities of seed so that they could be introduced into European materia medica with success. A brief review of the chemistry of the seeds follows showing that the different varieties are different in chemical composition and therefore differ in their physiological action. Not only are the commercial strophanthines prepared from the cheaper *S. hispidus*, but they differ materially in their toxic properties. H. Thoms, therefore, undertook a chemical investigation of the hispidus seeds and succeeded in isolating and identifying choline, $N(CH_3)_3(OC_2H_5)OH$, and trigonelline, the methyl betaïne of nicotinic acid. Strophanthine was isolated by precipitation with ammonium sulphate and the author expects to report in detail on this substance in the near future. [Berichte, 31, p. 271.] *E. K.*

Estimation of Hydroxylamine and Hydrazine. — The volumetric methods heretofore used for the estimation of the above compounds could not be applied in the presence of other oxidizable substances. K. A. Hofmann and F. Kuspert have recently proposed a method that is free from this objection, depending upon the use of ammonium metavanadate in dilute sulphuric acid as an oxidizing agent and measuring the liberated nitrogen. By titrating the remaining solution with permanganate and so determining the amount of vanadate reduced to vanadyl sulphate, the results can be further controlled.

The operation is best conducted in a fractionating flask provided with a separating funnel and a tube for the introduction of carbon dioxide, the exit tube of the flask being connected with an azotometer. The reaction proceeds quantitatively at 60° C. according to the following equations:

$$2NH_3O + O = N_2 + 3H_2O.$$

$$N_2H_4 + 2O = N_2 + 2H_2O.$$

Since hydrazine requires for oxidation twice as much oxygen per molecule as hydroxylamine, mixtures of the salts of these substances can also be analyzed. The results given by the author are very satisfactory. *R. F.*

Preparation of Gentianose.—This analogon of cane sugar was discovered by Arthur Meyer in 1881 in the root of *Gentiana lutea* L. Bourquelot and Nardin recommend the following method for its preparation. The finely cut root is dropped into boiling alcohol and boiled for 20—25 minutes. The expressed extract is filtered and evaporated. The liquid acid residue is neutralized with calcium carbonate and the filtrate evaporated to the consistency of a soft extract. The extract is dissolved in one-half its weight of

water and while still heating 4.5 parts of 95 p. c. alcohol are added. The solution is set aside for 14 hours and decanted. Crystallization soon begins, but is completed only after fourteen days. The crystals are purified by recrystallization from 95 p. c. alcohol. The small lamellae do not contain water of crystallization and melt at 207°. Their aqueous solution is dextrogyrate, $[\alpha]_D = +31.25°$. Birotation was not observed. Fehling's solution is not reduced by gentianose, but after treatment with dilute sulphuric acid the solution becomes lævogyrate and reduces Fehling's solution.

[Apt. Ztg., 13, 101; from C. r., 126, p. 280.] *E. K.*

Assay of Glycerophosphates.—A Astrue has confirmed the view that calcium glycerophosphates in solution are alkaline to methyl-orange, and that they may be either acid or alkaline to phenolphtalein. To determine the amount of phosphoric acid present, he neutralizes a known volume of glycerophosphate solution with sulphuric or hydrochloric acid, with methyl-orange as indicator, then titrates the solution with standard alkali and phenolphthalein. In the equation representing the first reaction—

$$\left.\begin{matrix} 2PO\begin{matrix}\diagup O \diagdown \\ —O \diagup Ca \\ \diagdown O—C_3H_7O_2\end{matrix} \\ + H_2SO_4 \end{matrix}\right\} = \begin{matrix}(PO_4C_3H_7O_2)_2CaH_2, \\ CaSO_4\end{matrix}$$

one molecule of mineral acid corresponds to two molecules of phosphoric acid, and in the second—

$$(PO_4C_3H_7O_2)_2CaH_2 + 2NaOH = (PO_4C_3H_7O_2)CaNa_2 + 2H_2O$$

or

$$\left.\begin{matrix}(PO_4C_3H_7O_2)_2CaH_2 \\ 2NaOH\end{matrix}\right\} = \begin{matrix}PO_4C_3H_7O_2Ca \\ PO_4C_3H_7O_2Na_2 + 2H_2O,\end{matrix}$$

one molecule of phosphoric anhydride corresponds to two molecules of soda. The quantity of phosphorus pentoxide in solution can thus be calculated, the results obtained being about 0.5 p. c. lower than those obtained by calcining a known weight of glycerophosphate, dissolving the ash in hydrochloric acid and determining the phosphorus or magnesium pyrophosphate. The author concludes that the phosphoric acid in glycerophosphates can be determined very closely and rapidly by the method he describes; that the glycerophosphates of lime appear to decompose, even during their preparation; and that undecomposed calcium glycerophosphate seems to require a quantity of acid equivalent to that of the soda necessary to act on phenolphtalein in order to react on methyl-orange.

[Pharm. Journ., 1898, p. 163; from Pharm. Journ. Chim. [6], 7, 5.] *E. K.*

Botany and Pharmacognosy.

Calumba.—J. U. Lloyd gives a succinet account of the drug calumba including: (1) botanical description and history; (2) drug description and constituents; (3) substitutions and related species; (4) the calumbo or

Miami Root; (5) physiological notes and pharmacopoeial record; (6) literature of Jateorhiza Calumba. [Western Druggist, 1898, p. 8.] *H. K.*

An Exudation of Larix Occidentalis. — A small specimen of a sweetish substance collected by Prof. C. S. Sargent, of Harvard University, on the upper Columbia river in British Columbia, was recently examined by Henry Trimble. Besides 5.02 p. c. moisture, 0.44 p. c. ash and 6.47 p. c. wood fibre and other admixed substances removed by filtration, it contained 19.38 p. c. of reducing sugar and 68.69 p. c. non-reducing sugar. The reducing sugar "had many of the properties of dextrose, but gave only a slight precipitate with phenylhydrazine. The non-reducing portion closely resembled dextrin." Similar saccharine exudations from conifers are the pinite from *Pinus Lambertiana*, or sugar pine, of California and the Briançon manna from *Larix Europea*. [Am. Journ. Pharm., 70, p. 152.] *E. K.*

Crystalline Substance from Daviesia latifolia. The material, 1.5 g., supplied by J. Bosisto was examined by Paul & Cownley who consider it glucosidal in nature. It was free from nitrogen and did not reduce Fehling's solution until after hydrolysis. Dried at 120°, it melted at 146°. It is readily soluble in hot water and crystallizes out upon cooling in the form of fine white needles. It is insoluble in ether, soluble in boiling chloroform and readily dissolved by weak alcohol, from which it was left as an amorphous residue on evaporation, but soon crystallyzed on the addition of a little water. It was soluble in caustic potash, and reprecipitated apparently unchanged by acids. [Pharm. Journ., 1898, p. 187.] *E. K.*

Commercial Eucalyptus Oils. In Helbing's Pharmacological Record for Dec. 1893, figures were given showing that a large proportion of the oils sold in London were almost destitute of eucalyptol. According to an examination of ten specimens made by E. Ockenden, the market at present seems to show little, if any, improvement. Three oils contained 46.4 p. c., 47.6 p. c. and 58.6 p. c. eucalyptol respectively. Two oils contained no eucalyptol whatever, the remaining five only a trace. The oils containing a large amount of eucalyptol were characterized by a high sp. gr. and a low rotatory power. These contained no phellandrene, which was found present in the poor oils. [The Chem. & Dr., 52, p. 366.] *E. K.*

Poisonous Alkaloids from the Borage Family. — The statement made in No. 16 of the Pharm. Ztg. for 1898 that *Echium vulgare* can be used as a substitute for curare has led K. Greimer to call attention to his observations that besides *E. v.*, *Cynoglossum officinale* and *Anchusa officinalis* contain a crystalline alkaloid which in doses of 0.02 to 0.03 of the hydrochloride produces in frogs the paralysing action in the termini of the peripheral nervous system in the same manner as does curare. These observa-

tions confirm those of Buchheim and Loos who in 1870 had obtained similar results with the extracts of *Cynoglossum* and of *Echium*. Pharmacological as well as chemical details of the investigation are soon to be reported.

[Pharm. Ztg., 43, p. 173.] *E. K.*

Donkin, a Poisonous Aroid in Surinam. — By this name the natives designate *Dieffenbachia sequinum* Scht. which belongs to the *Araceae*. According to J. F. Pool, neither an alkaloid, glucoside nor a bitter principle could be found in it. The poisonous character of the plant, to which cattle especially often fall a victim, seems due rather to the presence of innumerable microscopical needles of calcium oxalate in the parenchyma cells. These fine needles which cause a violent itching when a stem of the plant is rubbed between the hands, penetrate the tongue and throat of the animal, causing these to swell and the animal chokes to death. As a remedy softening substances like syrup or sweet oils are considered best.

[Chem. Centr.-Bl., 69, p. 520; from Nederl. Tijdschr. Pharm., 10, p. 21.]

I. W. Brandel.

Nekoe, an Indian Fish Poison. — By the name *Nekoe* J. F. Pool informs us the natives of India designate the stalk of the papilionaceous plant, *Louchocarpus violaceus* Rth., growing in Surinam. This plant has a disagreeable ammoniacal odor, wherefore it is also called *tiengi hoedoe*, stinkwood. The natives carry on fishing in the following manner: a bay being enclosed by a dam, they strike the water with the wood. After a time the fish come to the surface unconscious. The active constituent of *Nekoe* is probably identical with the *derrid* of *Derriseclipticа* and with other substances going under different names, which are found in several of the *Papilionaceæ* (*Theophiasia*, *Piscidia*, etc.) For its preparation, *Nekoe* is first digested with alcohol, this alcoholic solution precipitated with water and the crude precipitated product freed from resinous substances by boiling with soda and dilute solutions of sodium hydroxide. It crystallizes from absolute alcohol in delicate scales which have an acrid taste, are free from nitrogen, insoluble in cold water, but soluble in almost all other solvents. The symptons of poisoning consist first of narkosis or numbness, accompanied by difficulty in breathing and vomiting. In course of half an hour death sets in. Dissection showed strong congestion of the blood in all organs, and ecchymosis in the lungs and kidneys.

[Chem. Centr.-Bl. 69, p. 520; from Nederl. Tijdschr. Pharm. 10, p. 18.]

I. W. Brandel.

False kola nut. — Two years ago some false kola nuts came into the London market from San Domingo, and were identified as, probably, the seeds of *Mora excelsa* (P. J. [4], 3, p. 380). J. H. Hart, a corresponding member of the Pharmaceutical Society in Trinidad, writes to say

that he has a specimen received from London and has compared it with the genuine seed of *Mora excelsa*, and finds that the peculiar form of the starch granules is the same in each.

[Pharm. Journ. 1898. p. 184.] *E. K.*

Omphalea megacarpa Hemsl. — Mr. Hart also wishes to direct attention to the value of the oil obtained from the seeds of this euphorbiaceous tree as a purgative. The government chemist in Trinidad, Professor Calmody, has obtained from the seeds a beautiful, bland, tasteless oil. Half the oil contained in a single seed is a brisk purgative, acting in about three hours, and not causing pain, and the action is of short duration. The seed is described as follows: — The shell of the seed is hard, rough, black, and somewhat brittle, whilst the interior is edible and of sweet nutty flavor, without any prominent characteristic. The fruit in which they are contained is some 3½ in. in diameter, and has a glabrous outside skin, which is a quarter to three-eighths of an inch in thickness, and somewhat pulpy and fibrous. Surrounding the seeds there is found a thin parchment covering, but this is partly aborted. Beneath this is a large quantity of starchy tissue, three-eights of an inch in thickness. The seed alone weighed only 13.150 grammes, but the starchy pulp surrounding a seed of medium size weighed 31.175 grams, fully 50 per cent. of which was found to be pure starch, having peculiarly irregular, partly triquetrous, and partly spherical grains, which adhere in the first instance in masses of 10 to 20 grains, the triquetrous and irregular side inwards, and the rounded side outwards. The nuts are said to be eaten in the woods by travellers and hunters, and are hence known as the Hunterman's nut. Unless the purgative part can be driven off by heat, it seems more probable that the starchy part would be the edible portion. Mr. Hart has forwarded a few of these seeds to the Museum of the Society. The seed is without any disagreeable flavor, but has a sweetish taste like an ordinary nut. So prompt and agreeable a purgative, causing no pain and acting for a short time only, seems worthy of attention. Although this new species of *Omphalea* is at present considered to be rare, it may be pointed out that similar properties are attributed to the oil of *Omphalea oleifera* or tamlor, a tree found at Acajutla, near Sonsonate, and described by Mr. Hunsley (see Pharm. Journ. [3], XIII., p. 301). There can be little doubt, therefore, that the trees of the genus are widely distributed over Central America. The fruit appears to be ripe in February and March. [Pharm. Journ., 1898, p. 184.] *E. K.*

Seed of Ceratonia Siliqua. — H. Marlière has made a study of the structure and development of the remarkably thick membranes of the cells of the endosperm of the carob seed. He states that, at an early stage, the cell wall is composed entirely of cellulose, with only a trace of pectic sub-

stances. After the secondary thickening has commenced, there is an outer and an inner layer of cellulose, and between the two a thick, mucilaginous layer, the result of transformation of the cellulose, and still impregnated by that substance. In the mature seed this secondary membrane has become completely transformed into mucilage; the cellulose remains only in the outermost tertiary layer. The reticulate structure characteristic of cell walls is still partially retained in the layer of mucilage. The cell walls of the cotyledons are composed entirely of cellulose without admixture of amyloid. As regards its chemical and optical properties, the mucilage of *Ceratonia*, is dissolved without inversion, deviates the plane of polarized light 10° to the right at a temperature of 20° C. Hydration in the presence of acids transforms the mucilage into three reducing sugars — dextrose, levulose and galactose. After hydration analysis indicates the presence of 68 p. c. of glucose, 19 p. c. of levulose, and 12.13 percent of galactose.

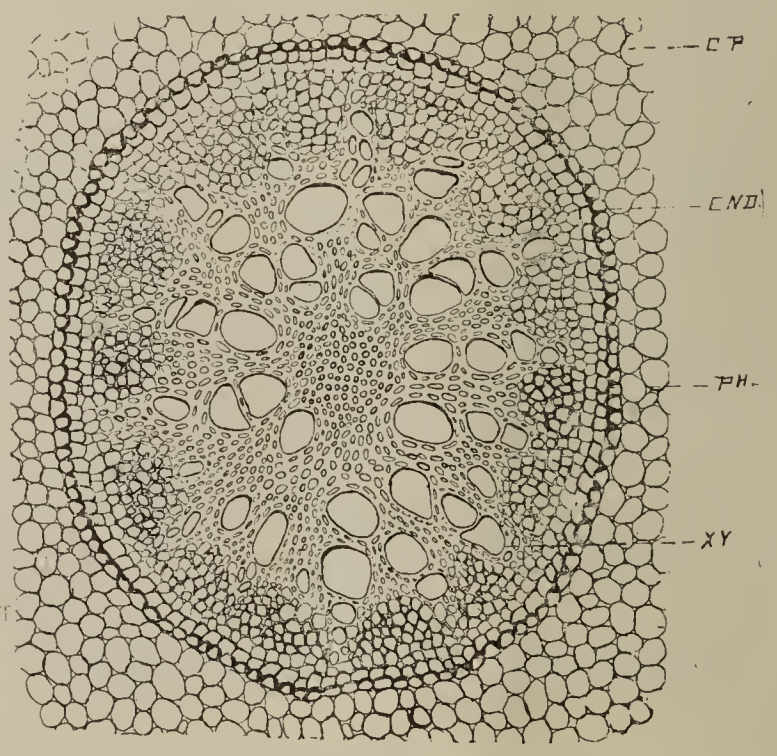
[Pharm. Journ. 1898, p. 164; from La Cellule, 13, p. 1.] *E. K.*

Veratrum viride Ait. and Veratrum album L.—The powder of our official *Veratrum viride* is said to be often adulterated with that of the closely allied European species, *Veratrum album*, and it was in order to determine whether or not such adulteration could be detected that this study was undertaken by R. H. Denniston.

Material of both species was procured from authentic sources.

In color, size, shape and general appearance one rhizome differs very little from that of the other. In *V. v.* the roots are generally left on in drying and in the European species are frequently removed.

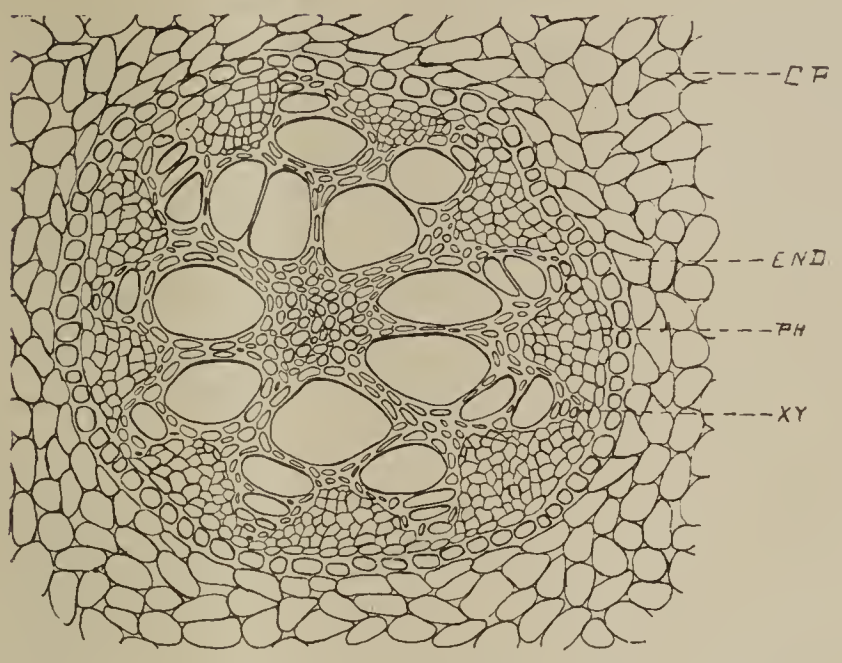
A careful comparative study of the anatomy of the two rhizomes fails to reveal structures which show marked differences, either in size, shape or secondary thickenings of the cells.



× Sect. of root-bundle of *V. a.* (60 diam.)

In the root-structure, greater differences are found. Directly beneath the epidermis in the root of *V. v.* the collenchyma region consists of but two to three rows of large and distorted cells, while in *V. a.* this region is generally made up of from seven to eight rows of

rounded, thicker walled and smaller cells which are not in the least distorted. Other differences were found to exist in the root structure, but they are of practically no value to us in identifying the powders, as *V. a.* is generally freed of its roots before powdering.



× Sect. of root-bundle of *V. v.* (60 diam.)

The form of the starch grains does not differ essentially in the two drugs, and raphides are found about equally in both species.

Finally, diagnostical differences were sought in the alkaloidal reactions shown by the two drugs. The powder of *V. a.* shows a bright brick-red color when treated with conc. H_2SO_4, while the powder of *V. v.* is colored orange-red by the same reagent. By these differences we are able to distinguish the separate powders, but when a mixture is made, the colors blend so as to make the test uncertain.

[Pharm. Archives, 1, p. 68.] *R. H. Denniston.*

Jamaica Ginger.—F. B. Kilmer gives an account of his personal experience in the land of ginger—Jamaica. The plant grows luxuriantly from 2000 feet up to the lofty summits of the Blue Mountain range. It requires soil and moisture. The underlying soil consists of white and yellow limestone, with trappeau formation, this is sometimes covered with a mould or loam deposit several feet in depth. The planter divides ginger into "blue" and 'yellow" from the color of the rhizome. These are also known as, respectively, "turmeric" and "flint." The root of the blue is hard and fibrous, yields a much less proportion of powder, is less pungent, and therefore less valuable commercially. In some cases the undried "blue" ginger is shipped to supply the demand for green ginger as used in pretching and preserving.

Ginger is planted in March and April and consists in bringing the divided fingers into trenches or holes a few inches below the surface and about a foot apart. On wet soil and during very rainy seasons the rhizome swells in spots, fills with water, turns black and emits an offensive odor. It is called "black rotten" and is supposed to be due to a worm, but is possibly a fungous.

Growing ginger must be well watered. Ginger can be, and is, grown in many places year after year on the same ground. More depends, however

upon the curing of ginger, considering the crop as a livelihood, than on the soil. Ratoon ginger is gathered from March to December, but p anted ginger is not ready for digging until December or January, and from then until March is the "ginger season." When the stalk of the ginger plant wither-, the rhizomes are twisted out of the ground with a fork. The hands are thrown in heaps, the fibrous roots are broken off and the soil and adherent matter removed. If the roots and soil are not removed, the product will not be wh te The custom is to throw it immediately into a dish of water, it is then ready for the uncrating or peeling operation; this is done by hand by means of the "ginger knife," which consists simply of a narrow-edged blade riveted to a handle. In large operations an expert peels between the fingers of the hands, less experienced hands peeling the other portions. There is an outer striated skin under which there are numerous layers of very thin-walled cork cells. This layer contains numerous oil cells, the oil cells being most numerous at the bud points. The oil contained in these cells, in specimens fresh from the ground, is almost colorless, very pungent and exceedingly aromatic. The peeled rhizome is thrown into water and washed. The purer the water and the more freely it is used the whiter will be the product. A few planters use lime juice in the wash water. This gives a whiter root, but one likely to mildew. In Jamaica, ginger is not deprived of its coat by plunging into hot water before scraping. Nor is ginger bleached with fumes of chlorine or sulphurous acid. After washing the ginger is dried under the sun either on cemented ground (called a Barbecue) or on leaves and sticks (called a mat). It requires 6 to 8 days for the shizoine to become thoroughly dry. It is stored in heaps until sold on "Ginger Days." For shipment it is packed in barrels. In 1896, 1,960,609 pounds of ginger were exported from Jamaica, more than one-half of which was shipped directly to the United States.

The yield and profit of the ginger crop depend somewhat upon the nature of the soil. An average yield can be estimated at from 1,000 to 1,500 pounds of dried ginger per acre. An approximate estimate of the expenditures or an acre of land planted in ginger is about $260.00. The receipts being about $300.00. Viewed from this standpoint, the cultivation of ginger on a large scale would be far from being remunerative.

[Amer. Journ. of Pharm., 70, p. 65.] *H. K.*

The Ash of Vegetable Drugs.—Dr. J. Hockauf has determined the ash constituents of a large number of powdered drugs obtained from apothecary stores and drug houses. The total ash was treated with hydrochloric acid to give the quantity of silicious material present. Of course, only the base figures can here be given, but it is believed they alone are of value. The percentages are calculated on the basis of the air-dry weight of the drug.

Name o Drug.	Total as .	Ash insol. in HCl.
Hyoscyamus leaves	14.5—35.7—72 p. c.	2.5—53.25 p. c.
Belladonna leaves	10.5—15 "	0.8—2.15 "
Stramonium leaves, select	20.3—21.3 "	2.87—2.45 "
Digitalis leaves	8.1—9.6 "	0.1—1.85 "
Salvia leaves	7.9—18—60 "	0.6–6.8–17.7 "
Mentha piperita leaves	10.0—16 "	1.5—2.7 "
Coca leaves	5—11.55 "	0.3—2.0 "
Orange leaves	15.75 "	2.2 "
Senna leaves	10—11.5 "	0.4—1.8 "
Cannabis Indica, select	13.14 "	1.73 "
Melilotus	9.0 "	—
Marjoram herb	12.5—19 "	—
Satureija herb, select	11.227 "	0.656 "
Thyme herb, select	8.5 "	2.3 "
Absynth herb	17.0—21.8 "	5.9—10.36 "
Sabina herb	5.0—7.3 "	0.2—0.7 "
Conium herb	12.0—8.0 "	—
Crocus stigmas	3.05–5.31–18.4 "	0.26—15.76 "
Colendula flowers	8.7—9.13 "	1.18—1.11 "
Carthamus flowers	5.6 "	1.1 "
Sandal wood	2.0 "	—
Cloves	4.0—6.9 "	0.25—0.60 "
Black pepper fruit	3.73—3.88 "	0.13—0.34 "
Penang pepper, poor	5.06 "	0.73 "
Cubeb fruit, select	5.85—8.12 "	0.09—0.39 "
Allspice fruit, select	3.9 "	0.03 "
Anise fruit, select, whole	6.23 "	0.45 "
Anise fruit, powdered, commercial	11.0—43.8 "	3.6—32.8 "
Fennel fruit, whole, select	8.94 "	0.24 "
Fennel fruit, powdered, commercial	8.8—15.6 "	0.8—6.35 "
Caraway fruit, select, whole	6.1 "	0.125 "
Fennel fruit, powdered, commercial	7.5—10 "	—
Cumin fruit, whole, select	7.5 "	0.3 "
Coriander fruit, whole, select	6.85 "	1.05 "
Star anise fruit, whole, com	2.98 "	0.17 "
Star anise fruit, powdered, com	3.5—8.5 "	0.1—1.3 "
Nux vomica seed, powdered	2.0—8.4 "	0.5—2.0 "
Cinnamon bark, powdered	2.45—11.35 "	0.1—7.85 "
Ceylon cinnamon bark, select	3.94 "	0.03 "

In course of the study yielding the results here tabulated, many interesting facts were encountered. In the residues undissolved in HCl, silicious

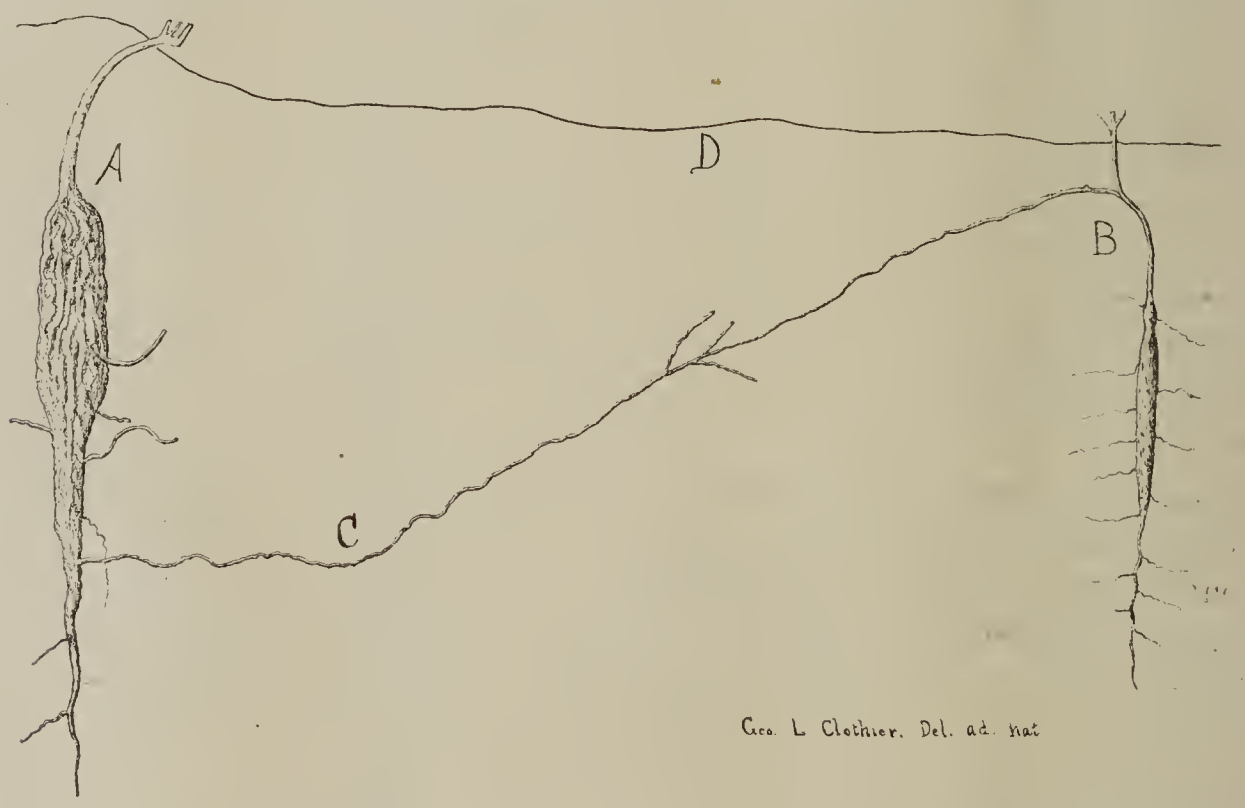
skeletons of certain elements were found, these often being beautifully demonstrable under the microscope. In the ash of pepper and cubebs certain cellular forms were thus preserved in the ash. The trichomes of *Canabis Indica* yielded similar skeletons. In abnormally large silicious residues the presence of sand was generally demonstrated as adulterant or as a result of insufficient cleaning of the drug.

In saffron, the addition of floral adulterations gave a lower total ash (3.2 p. c.) than the pure article (5 p. c.), but a higher ash insoluble in HCl 0.30 p. c. for the adulterated drug as against 0.28 p. c. for the pure. Barium was detected in the ash of a strongly adulterated specimen.

The color of the ash was found to vary much in the different drugs incinerated.

[Zeitschr. d. allg. oesterr. Apoth.-Ver. 52, pp. 1 and 25.] *R. H. T.*

Root Propagation of Ipomœa Leptophylla. — *Ipomœa leptophylla* Torr., whose habitat is the dry sandy regions of the plains, has a fleshy, spindle shaped tap root that often attains an enormous size. In adult plants, the surface of this is covered with a corrugated woody layer that hinders evaporation, while the inner tissue is stored with abundant food materials.



According to G. L. Clothier, the propagation roots originate from various parts, pass out horizontally for a short distance, then rise to near the surface of the ground several feet away from the mother plant, where adventitious buds are produced. A number of young plants may have their origin in series from a single propagating root. The buds are formed only where the root has attained to the proper distance from the surface of the ground for the thrifty growth of the young plants. Each young plant, while still

connected with its parent, sends down a fusiform fleshy root which penetrates the soil to a depth of three or four feet.

The accompanying figure shows the fleshy root of an old plant connected with a young plant by one of its propagating roots. It was noticed that the propagating root under consideration was thinnest at a point two or three feet away from the young plant, and that it branched back of this point, probably giving rise to propagating rootlets of other young plants. It took its origin from the mother plant about three feet below the surface of the ground. [Botanical Gazette.] *R. H. T.*

Practical Pharmacy.

Formalin for the Denaturalization of Alcohol. — Inasmuch as alcohol denaturalized with pyridine produces nausea and headache when burned, P. G. Unna recommends the addition of from 2 to 20 p. c. of formaline.

[Apt.-Ztg. 13, p. 166; from Monatsh. f. pr. Denn, 1898, p. 198.] *E. K.*

Mel Foeniculi. — The following "practical" formula is suggested by G. A. Eilers: purified honey, 150 parts; simple syrup, 300 parts; solution of fennelated ammonia (prepared like *Liquor ammoniæ anisatus*), 5 parts; tincture of sugar, a sufficient quantity. This "Fenchelhonig" can be readily prepared, remains clear, acts fairly well and has the agreeable taste of fennel. A special virtue seems to be that customers may be given "liberally for their money". [Apt.-Ztg., 13, p. 167.] *E. K.*

A Clear Solution of Cocaine and Corrosive Sublimate for hypodermic injections is directed to be made by dissolving 0.2 of mercuric chloride with the aid of 0.75 sodium chloride in the smallest possible quantity of water. The solution is boiled for a moment and added to 7.00 glycerin contained in a 30 g. bottle. The solution of 0.1 g. cocaine hydrochloride is then added gradually while constantly shaking the bottle. Finally sufficient recently boiled, distilled water is added to make 20 ccm.

[Apt. Ztg. 13, p. 166; from Les nouv. reméd., 1898, Febr.] *E. K.*

Liquid Benzoin for Benzoinating Lard.—Richard W. Shoemaker recommends the following as superior to the U. S. P. method of benzoinating lard: benzoin, 20 gm.; ether, 40 gm.; castor oil a sufficient quantity to make 15 gm.

Macerate the benzoin in the ether for twelve hours; filter, dissolve the castor oil in the filtrate and distil off the ether.

To make benzoinated lard, use: Liquid benzoin, 15 gm.; white wax, 20 gm., dehydrated lard, 965 gm. Melt the lard and the wax by heating with steam heat to eliminate water; add the liquid benzoin, and stir until cold.

[Am. J. Ph., 70, p. 9.] *A. B. S.*

Acetone as a Solvent in Preparing the Official Resins. — Edward F. Hahn compares acetone with alcohol as a solvent in the manufacture of official resins with the following results:

By following the U. S. P. method, using alcohol 6.5 per cent of resin was obtained from jalap, with acetone 7.5 per cent of resin was obtained. From podophyllum 4 per cent of resin was obtained with alcohol, and 4.5 per cent with acetone. With scamony the yield was the same with both solvents.

The resins obtained by the use of acetone were entirely soluble in alcohol.

[Am. Journ. Ph., 70.] *A. B. S.*

New Remedies.

During the past year comparatively few new remedies have been introduced, and, notwithstanding the interesting nature of the subjects appointed for discussion at various important meetings, the course of debate in most instances showed that there was a certain distrust of new remedies intended to deal with a single symptom, and a wholesome reliance upon modes of treatment which attack causes rather than results. The various forms of serum treatment have been employed with increasing confidence; diphtheria and tetanus continue to furnish matter for clinical reports in favor of the respective antitoxins, while the work of Koch has been further extended upon a more certain basis. Some of the older remedies have, as usual, been found to produce toxic symptoms under exceptional conditions, and it has been deemed desirable to allude to these briefly, since they afford valuable indications of possible dangers. For the present, the research for a satisfactory local anaesthetic appears to absorb a great deal of interest; and though cocaine still holds its own, its position has been assailed by numerous other candidates for favor. Eucaine, which was at first much employed, has been gradually falling into disfavor, while holocaine and other local anaesthetics have been introduced.

[Yearbook of Treatment for 1898.] *E. K.*

Pyroform.—This new remedy is prepared by Fr. Hoffman—La Roche & Co. of Basel by treating subiodide of bismuth with pyraloxine (oxidized pyrogallol). It is less poisonous than pyrogallol as a substitute for which it has been used in dermatology. [Pharm. Zeit., 1898, p. 41.] *R. F.*

Tannon. — This intestinal adstringent, prepared by K. Hock, is a condensation product of tannin with hexamethylenetetramine (urotropine). Upon mixing aqueous solutions of these two substances, a white precipitate is formed, slightly soluble in water or alcohol and having an astringent taste. It looses these objectionable properties when slowly heated to 100° C. or when heated for some time with water or glycerin. Depending upon the

proportions of the constituents used, the final product will contain 3—6 molecules of tannin to one of urotropine.

[Chem. Ztg., 1898, p. 42; Apoth. Ztg., 1898, p. 59.] *R. F.*

Glandulen.—This substance, the active principle of the bronchial glands, is prepared from the bronchial glands of animals, preferably sheep. For this purpose the glands are extracted with water or alcohol, and the glandulen precipitated from this extract with acids. The precipitate is washed and dried and generally compressed into tablets after mixing with sugar of milk.

[Chem. Ztg., 1898, p. 42; Apoth. Ztg., 1898, p 59.] *R. F.*

Preparation of Thyroidin.—This name has been given by Notkin to a ferment prepared from the thyroid gland. In preparing thyroprotein, this substance is rendered insoluble by a mixture of alcohol and ether instead of by strong alcohol as formerly. The proteid is now extracted with dilute sodium hydroxide solution (1:1000) and the ferment precipitated with acid and ether-alcohol. The precipitation can also be accomplished by causing a voluminous precipitate of magnesium or aluminum hydroxide in the solution itself. [Chem. Ztg., 1898, p. 108; Apoth. Ztg., 1898, p. 101.] *R. F.*

New Antiseptics.—Upon mixing a solution of albumen with one of iodoform in the presence of some albumen precipitant, e. g. alcohol, a precipitate is formed consisting of albumen and iodoform, but from which the iodoform can be removed by suitable solvents. If, however, the precipitate is heated for some hours at 120° C., a compound is formed in which about 15 p. c. of iodoform is firmly bound to the albumen. This preparation, prepared by Moll & Co., is nearly odorless, can be sterilized, and is suitable as a substitute for iodoform.

[Chem. Ztg., 1898, p. 106; Apoth. Ztg., 1898, p. 101.] *R. F.*

A. Classen has recently prepared combinations of starch and similar substances (dextrin, gums, etc.) with acetic aldehyde and paraldehyde, by subjecting mixtures of these substances to high temperatures under pressure, and removing the excess of aldehyde with alcohol or some other solvent. The methods of preparation as well as the general properties of these compounds are similar to those of the corresponding formic aldehyde compounds (amyloform, etc.) like which they are to be used in the treatment of wounds.

[Chem. Ztg., 1898, p. 106; Apoth. Ztg., 1898, p. 101.] *R. F.*

Ferralbumose.—According to Dokkum, this peptone-iron preparation is prepared by treating chopped meat, deprived of fat, with artificial gastric juice, filtering, freeing the filtrate from albumen, neutralizing with sodium carbonate, again filtering and concentrating in vacuo. The dried albumose so obtained is dissolved in ten parts of water, precipitated with a 10 p. c. solution of ferric chloride and the precipitate dried and powdered. The finished product should contain about 10 p. c. of iron. *R. F.*

Literary.

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R. Gaertner's Verlagsbuchhandlung — Berlin. Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neuesten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie, mit Hinweis auf Maschinen, Apparate und Literatur. Herausgegeben von Dr. Emil Jacobsen. 36. Jahrgang. 1897. Zweites Halbjahr. Erste Hälfte. pp. 315—456, mit in den Text gedruckten Illustrationen.

Lea Brothers & Co.—Philadelphia. The year-book of treatment for 1898. A critical review for practitioners of medicine and surgery. One vol., pp. VIII, 484. 1898. $1.50.

J. B. Lippincott Company — Philadelphia. The pharmacist at work. By William C. Alpers. One vol., pp. IX, 326. 1898. $1.00.

Verlag von Julius Springer—Berlin. Schule der Pharmacie. Herausgegeben von Dr. J. Holfert, Dr. H. Thoms, Dr. E. Mylius and Dr. K. F. Jordan. II. Chemischer Theil. Bearbeitet von Dr. Hermann Thoms. Ein Band, pp. VIII, 456, mit 106 in den Text gedruckten Abbildungen. Zweite verbesserte Auflage. 1898. M. 7.00.

——Handbuch der Drogisten-Praxis. Ein Nachschlagebuch für Drogisten, Farbwaarenhändler, etc., von G. A. Buchheister. Fünfte Auflage. Mit 225 in den Text gedruckten Abbildungen. 1898. M. 10.00.

Verlag von Vandenhoeck und Ruprecht — Goettingen. Jahresbericht der Pharmacie. Herausgegeben vom Deutschen Apothekerverein. Bearbeitet von Dr. Heinrich Beckurts, Braunschweig. XXXI. Jahrgang, 1896. Erste Hälfte. 1897. M. 11.00.

Author—Cincinnati. Strophanthus hispidus D. C. By John Uri Lloyd. Reprint from Western Druggist. Pamphlet, pp. 11.

—— Vanilla planifolia. By J. U. Lloyd. Reprint from Western Druggist. Pamphlet, pp. 13.

Bulletin of the New York Botanical Garden. Vol. 1, No. 3. pp. 87—170.

L. H. Pammel — Ames, Iowa. Bulletins 32—36 of the Iowa Agricultural College Experiment Station.

Reviews.

Leitfaden für die quantitative chemische Analyse unter Mitberücksichtigung von Massanalyse, Gasanalyse und Elektrolyse. Von Prof. Dr. Carl Friedheim. Fünfte gänzlich umgearbeitete Auflage von C. F. Rammelsberg's Leitfaden für die quantitative Analyse. Ein Bd., pp. xii, 515, mit 36 Abbildungen und einer beiliegenden Tabelle. Carl Habel, Verlagsbuchhandlung, Berlin. 1897.

In 1829 the first edition of Heinrich Rose's Handbook of analytical chemistry was published. Its general excellence is attested by the fact that the fourth edition appeared only nine years later. The fact, however, that the second edition had to be published in two volumes in order to accommodate the mass of material explains why this excellent handbook could hardly be longer used as a guide for beginners. As a result the shorter guides of Rammelsberg, Fresenius, Elsner and others appeared. Rose himself realized not only the change which his own work had undergone and called the fifth edition an "Ausführliches Handbuch", but he also recognized the need of shorter guides and gave his sanction to Rammelsberg's Leitfaden by permitting it to be written "with special reference" to his own larger work. Rammelsberg's guide to qualitative chemical analysis was published in 1843 and has seen eight editions. His guide for quantitative chemical analysis appeared two years later. New editions appeared in 1863, 1874 and 1876. Professor Friedheim, who has been entrusted with the recent revision of both guides, had already taken part in the revision of the fourth edition of the Guide for quantitative chemical analysis and has now not only revised but completely worked over the fifth edition of this work.

Whereas Fresenius' works comparatively early outgrew their original character as guides and developed into manuals that have largely taken the place of Rose's Handbook, the guides of Rammelsberg retained their character as such even in the recently remodeled form of Friedheim. This fact by no means precludes growth, i. e. development in harmony with the progress of chemical analysis. The development, however, has been largely qualitative rather than quantitative in its nature. The inclusion of gas analysis and electrolysis naturally implied an increase in volume, but the various methods of analysis have been blended in such a manner as not only to make an organic whole, but also to preclude an undue expansion in volume. The expressed object of the guide is to stimulate the student to independent thinking and to prevent, if possible, his becoming an analytical machine. A scientific treatise that has been so fortunate in its revisors as to render it adapted to the needs of the respective times during a life history of more than half a century certainly merits the attention of every teacher of analytical chemistry.

E. K.

MANUAL OF QUALITATIVE CHEMICAL ANALYSIS. By the late Dr. C. Remigius Fresenius. Authorized translation by Horace L. Wells. Professor of Analytical Chemistry and Metallurgy in the Sheffield Scientific School of Yale University. New edition, thoroughly revised, from the sixteenth German edition. One VOL., pp. XVII, 748. John Wiley & Sons, New York. 1897. $5.00.

One of the principal problems of chemistry is to ascertain the composition of substances. As a result chemists have always studiously improved the methods by means of which this object might be attained. Already during the phlogistic period valuable observations were collected by such men as Boyle, Hoffmann, Marggraf, Scheele and especially Bergmann, which enabled the detection of inorganic substances with certainty. Bergmann was the first to devise a course of qualitative analysis according to the wet method. Berzelius also added materially to the improvements of analytical methods. In 1801 Lampadius published his Handbuch zur chemischen Analyse der Mineralien and in 1802 Goettling his Praktische Anleitung zur prüfenden und zerlegenden Chemie. Both works contained the best analytical methods of their day. In 1829 Hein-

rich Rose published the first edition of his analytical treatise, which developed rapidly and which in 1851 was published in two heavy volumes as Ausführliches Handbuch der analytischen Chemie. In connection with the work of Rose, which acquired a special reputation and which passed through a number of editions, the Anleitung zur qualitativen chemischen Analyse of Fresenius, who accomplished so much for the entire realm of analytical chemistry, must be mentioned.

Although this Nestor of analytical chemistry died last June, his works survive him and, no doubt, will continue to play an important role in that branch of chemical science to which he, with a rare singleness of purpose, had devoted his entire life.

Fresenius was born Dec. 28, 1818 in Frankfurt on the Main. In 1836 he entered pharmacy and at the same time the Senkenbergische Institut in Frankfurt. In the winter of 1840—41, while a student at Bonn, he wrote out a course of qualitative analysis for the sake of practice. Having been for a time without a teacher, he fully appreciated the difficulties that present themselves with the use of larger works, such as that of Heinrich Rose, as sole guide. He was persuaded to publish his notes, which constitute the first edition of his Anleitung. In the spring of 1841 he became Liebig's assistant at Giessen. Here he had an opportunity to put his guide to a test. It was also introduced into the Pharmaceutical Institute at Bonn. The second edition appeared in 1842 and was prefaced by a few remarks by Liebig, who called attention to its advantages and recommended it especially to apothecaries. In this edition the systematic course was preceded by a descriptive part relating to reactions, thus making the treatise an independent one. This edition was translated into Dutch, English, French and Italian.

In the autumn of 1845, Fresenius removed to Wiesbaden, where he was Professor of Chemistry, etc. at the Agricultural Institute. Not being able to devote most of his time to his favorite task, viz. that of teaching analytical chemistry to young men, he opened an independent laboratory for instruction in the spring of 1848. This developed into an important institution which attracted students from all parts of the world and which is still operated by his sons. In rapid succession the Anleitung went through new editions, improvements and additions being constantly made but he always remained true to the firm principle, never to admit anything into his work

without personal verification. With the growth of the book, it no doubth partly outgrew its early *raison d'être*. It more and more assumed the size of Rose's Ausführliches Handbuch, to which the first Anleitung was to serve as stepping stone. By the insertion into the last (sixteenth) edition of a much larger number of references to chemical literature, relating especially to additional methods, the character of the book as a reference work was still more emphasized. The usefulness of the work was thus considerably enhanced, without unduly increasing its size.

The general character of this work is so well known that it is hardly necessary to dwell upon its contents or its merits. The privilege for translation of the last German edition was obtained only a few months before the author's death. It seemed more appropriate, therefore, to review briefly the life-history of this book than to dissect it. A history, such as this book possesses, speaks for itself. In closing this necessarily brief account, attention should be called to two other series of publications: the work on quantitative chemical analysis, the companion to Fresenius' first attempt in chemical literature; and secondly to the Zeitschrift für analytische Chemie, which was begun in 1862 and which to-day admirably supplements the two manuals. *E. K.*

Formulaire des Médicaments Nouveaux pour 1898, par H. Bocquillon-Limousin, pharmacien de 1re classe, lauréat de l'École de pharmacie de Paris. Introduction par le Dr. Huchard, médecin des hôpitaux. 1 vol. in 18 de 320 pages, cartonné, 3 fr. Librairie J. B. Baillière et Fils, Paris.

Of the many formularies on pharmaceutical and medical subjects issued by the above publishers, the one at hand together with its complement, the Formulaire des médications nouvelles, are the ones that require most frequent revisions on account of the number of new remedies and new methods of treatment that are continually being introduced.

The ninth edition of the Formulaire des médicaments nouveaux differs from the foregoing one only in the addition of remedies that have found their way into medicine during the past year. It furnishes in a convenient form a list of comparatively recent remedies, their synonyms, description, composition, therapeutic properties, mode of administration, and dose. *Richard Fischer.*

ANLEITUNG ZUR CHEMISCH-TECHNISCHEN ANALYSE. Für den Gebrauch an Unterrichts-Laboratorien bearbeitet von Prof. F. Ulzer und Dr. A. Fraenkel. Ein Bd., pp. xi, 192, mit in den Text gedruckten Abbildungen. Verlag von Julius Springer, Berlin. 1897. M. 5.00.

The close relationship that has developed between chemical science and chemical industry has been productive of much mutual good. As one result of this relationship chemico-technical analysis has undergone rapid development during the past decades. More than one branch of it has been placed on a good scientific basis, a fact attested by general works such as Boeckmann: Chemisch-technische Untersuchungsmethoden, or by special works like Benedikt: Analyse der Fette und Wachsarten (see p. 77). Whereas such detailed works as these will always be found serviceable to the chemical analyst or specialist, these books cannot be used as instructional guides for beginners in technico-analytical work. Indeed, they were not written with such purpose in view. Yet a demand for such a work has arisen on the part of chemical students who are preparing themselves for this kind of work. A careful selection of subjects from the various branches of chemical industry has been made and under each subject only select methods are given. The text presupposes a knowledge of qualitative and quantitative analysis, both gravimetric and volumetric. This has enabled the authors to crowd a large amount of information within a small compass. Professors of chemistry who teach technico-chemical analysis will, no doubt, find the book very serviceable. *E. K.*

KÖHLER'S NEUESTE UND WICHTIGSTE MEDICINAL-PFLANZEN in naturgetreuen Abbildungen mit kurz erklärendem Texte. Ergänzungsband zu dem in den Jahren 1883—1890 erschienenen Hauptwerke in 2 Bänden. Herausgegeben von Dr. Max Vogtherr. Druck und Verlag von Fr. Eugen Köhler, Gera-Untermhaus. Lieferungen XVII bis XIX, à 1 M.

The new numbers of this excellent work contain illustrations of the usual high grade of execution representing the following plants: *Carica Papaya* L., *Chaerophyllum bulbosum* L., *Eucalyptus Globulus* Labill., *Gaultheria procumbens* L., *Strychnos toxifera* Benth., *Juniperus Oxycedrus* L., *Papaver Rhœas* L., *Schleicheria trijuga* Willd.,

Peumus Boldus Molina, *Aconitum ferox* Wallich, *Castanea vesca* Gaertn. and *Oryza sativa* L. Although to many here in America a number of plants in this list would hardly seem to be important as drugs, the editor of the work doubtless has his good reasons for including them. *Rodney H. True.*

GESCHICHTE DER PHARMACIE. Unter Mitwirkung angesehener Historiker und Fachgenossen, herausgegeben von Dr. J. Berendes, Apotheker. Erste Lieferung, pp. 80. Ernst Guenthers Verlag, Leipzig. 1898. M. 2.00.

There are possibly few chapters of the history of civilization that are more interesting than that of pharmacy. Yet the history of pharmacy seems to have been less cultivated than most chapters of the history of civilization. The causes for this apparent neglect are not difficult to ascertain. On the one hand the general historian is not sufficiently imformed with regard to the history of the natural sciences and of the art of pharmacy in particular. On the other hand the educated pharmacist as a rule does not possess the requisite philologic and historic knowledge which is absolutely essential as a foundation upon which to erect the complex structure, the history of pharmacy.

Some of the oriental countries which are to-day considered as having contributed in no small measure, directly or indirectly, to European civilization are even to-day largely *terra-incognita* to the historian. Considerable material has come to hand during the past decades, but the philological difficulties are such that even the specialist can often offer little more than conjecture by way of interpretation. A source of danger seems to arise in the natural tendency of the non-specialist to accept and use these conjectures as more or less well-established historical facts.

Dr. Berendes is already well known as the author of Pharmacie bei den alten Culturvölkern. This book, no doubt, has served him as excellent preparation in the writing of the broader work, the Geschichte der Pharmacie. For his first historical venture, Dr. Berendes has received much well-merited praise. He has also, and this fact should not be entirely overlooked, been severely criticized—whether justly or unjustly the writer does not venture to state—for grave philological errors. In this connection it may be of interest to some to note that Kopp, the author of our classical History of

Chemistry, is said to have been criticized on the very same ground. In the present instance, the author's attention has been very graciously called to the natural error of general writers, already alluded to above, by an Egyptologist.

These remarks have not been made in any hypercritical spirit. Even if they had been, they could do nothing to depreciate the general value of the work. German pharmacists are proud, and justly so, that one of their rank and file should have undertaken so difficult a task as that of writing a history of pharmacy that begins with the dawn of civilization. Students of pharmacy, who take any interest whatever in the history of their art and science, certainly ought to be exceedingly thankful to the author for having made a pioneer attempt at so difficult a task. That the publishers intend to ably support the author is shown by the illustrations and facsimiles included in the first part. The book is to be complete in ten Lieferungen which are to appear in rapid succession and which can be had at moderate price. The book should find a place in the library of every pharmacist who loves his calling. *E. K.*

THE PHARMACIST AT WORK. By William C. Alpers. One vol., pp. IX, 326. J. B. Lippincott Company, Philadelphia. 1898. $1.00.

Many a pharmaceutical practitioner, if his busy life leaves him an occasional moment for reflection, will remember with what interest he inspected as a boy the show-window of the drug store which he later entered as apprentice, or the curiosity with which he observed the proprietor while busy behind the prescription counter, or the clerk at work in the laboratory. Possibly he will also remember how, when apprentice, the realism of every day drug store life almost caused him to abandon the vocation for which he had such a longing. Possibly also, he has forgotten most of the trials of a severe apprenticeship and recalls with some pleasure the brighter moments of those early years. He remembers the instruction given by his preceptor late in the evening after a long day's work was mostly done; he may even have among his books and papers stored away in the attic the laboratory note-books to assist his memory in recalling some of the details. Some of the recollections will, no doubt, cause him to smile, especially when he recalls some of the odd misconceptions of the latest apprentice or the jokes perpetrated upon him by the

porter boy who took great pleasure in revealing his superior wisdom on such occasions.

Fortunate is the druggist who can look back upon such a time, whose days of apprenticeship were not consumed solely by the business routine of the shop, but whose preceptor took some pride and even pleasure in keeping up the professional side of his calling. Those who are of this fortunate class will read with pleasure the book that lies before us. They will see in many of the incidents related in its twenty-four chapters the story of some of their own experiences. "Ye bring with you the images of happy days, and many loved shades arise." Those who have been less fortunate will possibly learn for the first time what they have missed, to what extent their early education and training has been deficient.

The real value of this unpretentious book does not lie so much in the facts that it teaches—though these are by no means to be underrated—but in the spirit which it breathes and necessarily imparts to a receptive young man. What we need more than a revision of pharmacy laws or a combination of druggists to keep up prices are more men who with heart and soul are pharmacists. The mere fact that a book of this kind has been written in our times of keen competition that is apt to stiple the better qualities of men of our calling is a good sign in itself. Let us hope that it will be widely circulated so that some of the unbounded enthusiasm of its writer may be imparted to those who are now entering upon their calling and who are still receptive and capable of being moulded. *E. K.*

Schule der Pharmacie. Herausgegeben von Dr. J. Holfert, Dr. H. Thoms, Dr. E. Mylius, Dr. K. F. Jordan. II. Chemischer Theil. Bearbeitet von Dr. Hermann Thoms, Professor und Docent für pharmaceutische Chemie an der Universität Berlin. Ein Bd., pp. viii, 456, mit 106 in den Text gedruckten Abbildungen. Zweite verbesserte Auflage. Verlag von Julius Springer, Berlin. 1898. M. 7.00.

The writer is of the opinion that it would be in the interest of both the public and of pharmacy if the latter followed the example of the learned professions rather than that of the skilled trades, viz. demanded a scientific training of its prospective members before they are admitted to the practical duties of the calling. Nevertheless, so long as the apprenticeship-system is adhered to almost universally,

it is well that persons beginning with the practical training of the shops be provided with the best possible guides to assist them. Even where the instruction of the apprentices by the preceptor is a legal obligation, e. g. in Germany, it is being recognized more and more that whereas the scientific demands upon the apprentice are becoming greater, the increasing business demands upon the preceptor prevent him from giving that instruction which the apprentice should have.

Although there has been no dearth of guides for apprentices in Germany, a special attempt was made early in this decade to supply a model series of guides written by men who were not only competent from a scientific standpoint, but also in sympathy with the modern needs of the apprentice. The Schule der Pharmacie in five volumes, written by four specialists and published by the well-known firm of Julius Springer, has met with the success which it merited. A second edition of parts one and two has recently appeared. The first part was reviewed last month (see p. 124), the second part lies before us.

In accordance with its intended use, the inductive method of presentation is in a certain measure followed and the pupil is encouraged to experiment by giving him directions for simple experiments. The numerous illustrations also assist materially in impressing the subjects discussed in the text upon the mind of the reader. Structural formulas used freely aid in initiating the apprentice into the study of the mechanism of reactions, thus counteracting in certain measure the undesirable effects of chemical equations.

The author takes a broad view of his subject. Pharmaceutical chemistry is not the narrow chemical pharmacy of some of the older pharmaceutical writers, neither is it a special science, it is chemistry in its broadest sense adapted to the needs of pharmaceutical students. A very fortunate arrangement has been made in relegating the tests for purity etc. to the fifth volume entitled Waarenkunde, thus relieving the general introduction to the science of chemistry from cumbersome detail. Attention, however, is called in this volume to tests for identity of the metals, and brief instructions for qualitative analysis, and volumetric quantitative analysis are appended. A complete index is provided so that the pupil can resort to the book for information in special cases as well as use it for systematic reading. Inasmuch as English pharmaceutical literature has nothing

equal to this School of Pharmacy, the work cannot be too highly recommended to those apprentices in this country who read German. The volumes can be purchased singly, a great convenience to the apprentice. The complete set will make a handsome and most useful gift on the part of preceptors to apprentices conversant with the German language. *E. K.*

ANATOMISCHER ATLAS DER PHARMAKOGNOSIE UND NAHRUNGSMITTELKUNDE von Dr. A. Tschirch und Dr. O. Oesterle. Leipzig. Chr. Herm. Tauchnitz. 1898. Lieferung 13. M. 1.50.

The present number of this valuable work treats of the following drugs: Condurango bark, *Gonolobus condurango* Triana; arnica flowers, *Arnica montana* L.; Juniper berries, *Juniperus communis* L.; golden seal, *Hydrastis canadensis* L., and the leaves and seeds of stramonium, *Datura Stramonium* L. Aside from the usual thorough study of the drugs concerned, many points of interest to the student of pure botany are discussed. The morphology of the juniper berry is a case in point. In no particular does this number fall below the high standard set by the preceeding parts. *Rodney H. True.*

JAHRESBERICHT DER PHARMACIE. Herausgegeben vom Deutschen Apothekerverein. Bearbeitet von Dr. Heinrich Beckurts, XXI. Jahrgang. 1896. Erste Hälfte. Verlag von Vandenhoeck und Ruprecht, Göttingen. 1897. M. 11.00.

Every one who has learned to value the Jahresbericht, will appreciate the change inaugurated, viz. to get at least a part of this most complete report on the progress of pharmacy into the hands of those who desire to use it as soon as possible. It is a step in the right direction. The sooner such reports become available the more indispensable they will prove themselves. When complete we shall be pleased to call attention to the contents of the Jahresbericht für 1896. *E. K.*

Pharmaceutical Review.

VOLUME 16. **MAY, 1898.** NUMBER 5.

Editorial.

As a rule the establishment of a new medical journal does not create much of a stir. It may cause some editor to call attention to the fact that already several hundred medical journals are published in the United States. Possibly also the ratio of medical journals to practitioners is pointed out and the question naturally arises, how are these hundreds of journals supported. The answer in a very large number of instances certainly cannot be gratifying to high-minded physicians. The fact, however unfortunately, is that the average physician, though he rides the high horse of professional ethics at the medical meetings, is somewhat careless, ethically speaking, in his daily practice. He has gotten into the habit of using preparations of which he does not know the composition or the manner of their preparation, why should he be particular as to the advertisements from which the medical journals to which he subscribes very largely derive their support.

The physician by no means stands alone in this respect. The pharmacist does not appear to be any more particular than his medical colleague. In fact, the public at large apparently pays little or no attention to the character of the advertisements of the daily papers which it reads. It has been pointed out to those who complain about yellow journalism that this form of journalism would cease as soon as the public withdrew its support. So long as the public will buy papers whose editorial and news columns are filled with sensational matter, with imaginary interviews and other lies, we can hope for little improvement in the advertisements of the daily press. That there exists a close affiliation between yellow journalism and what might be termed "yellow" or even "scarlet" medical advertisement, no one who has at all looked into the matter will doubt. A correspondent of the "Nation"[1] recently called attention to the

[1] Nation, 66, p. 224; also Printer's Ink, March, 1898, p. 48.

fact that the manufacturer of a secret preparation containing morphine claimed to obtain the best advertising results from papers which have a reputation of being decidedly "yellow."

What a "home" newspaper promises its readers and how it keeps its promises in its advertising columns, was recently shown up in one of our latest medical journals:[2]

"*What a daily newspaper says of itself:*"

"Women who think always find **The Daily Press** helpful. If any woman wants the latest information on any subject, all that is necessary is that she communicates her wishes to **The Daily Press,** and, if her subject is in any sense of general interest, the writer can depend on finding exactly what she wants, from the highest authority, with the least possible delay. It is, to all intents and purposes, conducted on the cooperative principle, and everybody has equal say; hence it is not exaggerating to say that the Woman's Page of **The Daily Press** is a page for every woman. **The Press** is Philadelphia's greatest home newspaper."

"*What it offers in the way of advertisements:*"

"——'s Pills, taken as directed, will quickly restore Females to complete health. They promptly remove obstructions or irregularities of the system."

"Marvelous appliance and one month's remedies of rare power will be sent on trial, without any advance payment, by the foremost company in the world in the treatment of men, weak, broken, discouraged from effects of excesses, worry, overwork, etc. Happy marriages secured, complete restoration or development of all robust conditions. The time of this offer is limited. No C.O.D. scheme; no deception; no ex-posure."

"Development of figure. The latest scientific discovery for developing the bust, a vegetable and floral liquid which is an ideal and perfect flesh food."

"A preparation entirely different in character from any heretofore used. Applied externally and guaranteed not only absolutely harmless, but positively beneficial to health. Will enlarge the bust from four to eight inches. Will make the neck, shoulders, arms, and calves plump and fill up hollow cheeks. Failure impossible."

[2] Phila. Med. Journ., 1, p. 477.

The same journal[3] publishes a letter addressed to a Philadelphia paper by a physician, who had been asked to subscribe to this boasted popular educator. The physician accused the paper of being a "party to an enormous and brazen fraud." He enclosed eight clippings from a single issue, which need not be reproduced here, for they can be found in almost any daily paper, accusing the editor and publisher of laying "this sort of pollution daily before the daughters of their subscribers."

Yet these same papers do not shrink from calling druggists all sorts of mean names when the latter do something that is not agreeable to the manufacturers of secret nostrums, these supporters of the daily press. In New York[4] it would seem that the reporters of these papers, when short on sensational material, constitute themselves self-appointed inspectors of the drug stores. At times they, no doubt, accomplish some good, frequently, however, they act in perfect ignorance and sometimes also they apparently willfully distort. In smaller cities and country towns, where the revenues of the papers are even more largely made up, proportionately speaking, from the advertisements of quacks and nostrum makers, the editors themselves do not hesitate to ventilate their "wrongs" against the druggist in abusive epithets. Only recently an editor who assumed a high moral tone in an editorial harangue against the druggists not only of his city, but of the state at large, admitted to the writer that his ethical discourse was prompted by little other than mercenary motive. He further admitted that he was wholly ignorant of what he had been writing about, yet before the public he appeared as one who knew it all, as one who knew evidently on positive information that the manufacturer and wholesaler could do no wrong, but that all dishonesty was to be laid at the door of the retail druggist.

It would not be fair, however, to close these remarks without calling attention to the fact that some few daily papers do not accept all the filthy advertisements which are offered them.

With such a state of affairs it is highly gratifying to see a medical journal take up this matter in an unmistakable fashion. As already pointed out, the creation of a new medical journal as a rule affords little cause for comment of any kind. The Philadelphia

[3] Ibidem, p. 261.
[4] Merck's Report, 7, p. 130; Pharm. Era, No. 19 and later numbers; Am. Dr. & Pharm. Rec., 32, p. 156.

Medical Journal, which is published since the beginning of this year, however, has created a stir very largely because it took a stand on this question. It announced its position with regard to "secret" and "proprietary" preparations and evidently intends to keep its advertising pages in harmony with its editorial columns. In order that its position may be better understood, some of its editorial comments from the earlier numbers are quoted herewith:

"'Secret' and 'Proprietary' Preparations.—There seems to be a great misunderstanding and misuse of these two terms. Some persons use them as if they were interchangeable, and even make the word nostrum synonymous. It would appear unnecessary to say that everything that is advertised must be owned by someone, have somebody as proprietor,—i. e., be "proprietary" in order to have some one to pay for the advertisement. Chairs and bicycles and cod-liver oil, if they have the distinctive name of a certain maker attached to them, are proprietary preparations. We have heard copyrighting spoken of as if it were something wrong or shameful, whereas in itself it has no ethical significance whatever. It is only a brand of the manufacturer. It is the possible secrecy of the copyrighted article, or the abuse of the method of copyrighting, that makes wrong. In reference to drugs, for example, the manufacturers may conceal the nature of the ingredients, and such things then become secrets; in this case we say it is unprofessional to use or to advertise them. We shall refuse to accept secret preparations as advertisements in the Philadelphia Medical Journal, but would be very glad to welcome all the advertisements of 'proprietary' articles made in the United States, provided they are not of secret constitution, whether these articles be drugs, dry-goods, furniture, carriages or what not, if of reputable character and from responsible makers."

"As to Advertisements.—The advertising of medicines of secret composition is the disgrace of medical journalism, and all physicians who have the honor and dignity of their calling at heart should demand that it be stopped. Should they cease to subscribe for journals that get an income in this way the abuse would soon come to an end. There are, however, some practical difficulties in the way of a correct decision in not a few cases. One is that many organic constituents cannot of course be accurately analyzed. But in answer to this it may be said that there should be no need of having them analyzed. The manufacturer should supply the names and quantities

of the constituents. His refusal to do so at once shows the desire to conceal, and this no genuine pharmacist would countenance.

Until government, scientific laboratories, or the wealth of a great journal supplies the profession with means of testing all remedies chemically and therapeutically, we, as a profession, must absolutely ignore all nostrums or secret preparations, and build up our knowledge of the materia medica by clinical induction. In the meantime we may rest secure that in the vast majority of instances secrecy as to constitution or ingredients means valuelessness. It is self-evident that we cannot pronounce any opinion as to the therapeutic value of articles advertised. No machinery exists for reaching such a conclusion scientifically. As a last resort we must doubtless sometimes rely upon the highest expert pharmaceutical judgment for an opinion. We are glad to say that, so far as our journal is concerned, this has been promised us, and both readers of and advertisers in our journal may be sure that our pages shall be kept as clean as professional ethics demands, or as our ability can determine."

That such a policy backed up from week to week with attacks on the various forms of secrecy and quackery should attract attention is but natural. Among medical journals the question of advertisements is, no doubt, as vital a question as it is with the daily press. The problem of medical advertisement is certainly a very touchy one with the medical profession. The vulgar multitude of medical journals which feeds largely on "unethical" advertisements, naturally is silent. Some few, however, who pretend and no doubt in some instances have honestly tried to maintain a high ethical standard in their advertising columns, have found fault in one or more particulars with the new-comer. In fact, the new journal has been severely scored for adopting an "holier-than-thou" policy and yet itself falling short of the highest standard. We are glad to see, however, that after some flurry of words the better journals are joining their efforts to accomplish a much needed reform, leaving out of consideration minor details.

The Review[5] has formerly discussed the subject of secrecy, of the

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[5] 1890. Fr. H.: Ueber das Geheimmittel- und Spezialitätenwesen, 8, p. 275.
1891. Fr. H.: Geheimmittel oder Volksmittel, 9, p. 151; Die Pharmacie und der Nostrumhandel, 9, p. 254.
1892. Fr. H.: The New "Plan," 10, p. 6; Das Selbstdispensiren der Aerzte, 10, p. 27; Die Pharmaceutische Grossindustrie, 10, p. 149; Gewerbliche Zeitfragen, 10, p. 231; W. C. Alpers: The cut-rate evil and its proper remedy, 10, p. 243.
1894. Fr. H.: "Vaselin" als Handelsmarke, 12, p. 101; Aerztliche Reclame im Dienste neuerer Mittel, 12, p. 178.
1895. Fr. H.: Unredliche Geschäfts-Concurrenz, 13, p. 80.
1897. E. K.: Secret "patent medicines" and patent preparations, 15, p. 61; Misuse of trade names, 15, p. 83; J. U. Lloyd: Ethics in pharmacy, 15, p. 83.

ethical aspect of patents and trade-marks and has also more recently published definitions of secrecy as interpreted by various courts. In this connection it may be well to give the interpretation of secrecy adopted by The Medical News some years ago, to which The Philadelphia Polyclinic[6] recently called attention in its controversy with the Philadelphia Medical Journal.

"A medical preparation may be secret (a) as to its constituents; (b) as to the method of manufacture; (c) as to the composition of the finished product; or (d) as to all of these; and such secrecy may be partial or general. From the standpoint of science or of the interests of the professions of medicine and pharmacy, all of these forms are to be condemned without qualification."

"Nevertheless," the editor of the Polyclinic continues, "under circumstances secrecy as to the method of manufacture, etc., does not so far affect the standing of a preparation as to make it obnoxious to the prohibition of the Code of Ethics against the use of nostrums; or to prevent physicians from using it with perfect propriety. That is to say when the *exact composition* of the finished product is made known, fully and without reserve, the physician need have no greater concern as to how it is made, than as to know how the steel of his knifes, or the gauze of his dressings is manufactured, or whether his favorite journal has its type set by hand or machine. Quinin sulphate, for example, may be manufactured by a secret or patented process—but the physician can nevertheless employ it without hesitation. Few articles, however, other than single chemicals, come under this heading."

A closing word to pharmacists. The attempt made by various pharmacal companies to supplant the secret "patent medicines" by preparations, the formulas of which are printed on the label, is highly to be recommended and deserves the support not only of a thinking public, but of the physician in particular. It is for this attempt at public education that the pharmacist has had to suffer innumerable attacks from the secret nostrum manufacturer through the agency of the daily press. Let us hope for the benefit of the public that the pharmacist will succeed in this mission in spite of the money bag of the manufacturing quack and the venality of the press.

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[6] The Philadelphia Polyclinic, 7, p. 159.

There is one point, however, in which the pharmacist closely resembles the editor of the newspaper. The latter claims to be irresponsible for what is inserted in the way of advertisements and reading notices by the business manager or advertising agent. So the pharmacist, who supports the pharmacal company by becoming a stockholder, on the one hand subscribes to the higher code of ethics which is to distinguish this company from the nostrum manufacturer, but on the other hand he continues the sale of the latter's nostrums. He at times does more. He permits the manufacturer to advertise him as agent in the same space in which he, the manufacturer, announces his bogus discoveries, brings forth arrogant claims in the name of science, lies outright or invites attention in round about way to immoral practice. The pharmacist thus becomes *particeps criminis* with the nostrum manufacturer.

It may be claimed that the public demands these remedies and that if the pharmacist does not sell them the department store will without hesitation or scruple. The "yellow" journalist brings forth the same claim with as good reason. It is true, the pharmacist is compelled for more cogent reasons to keep these nostrums, viz. because the medical profession prescribes them. It will, no doubt, be difficult for the pharmacist to understand why it should be proper to dispense these nostrums on the strength of a physician's prescription and why improper to sell them to a customer who demands the same article.

There are still other problems which are not easy of solution, as shown e. g. by the differences of opinion held by those who are most earnest in the abolition of secrecy in medicine and pharmacy. Whereas we are taking steps to move away from some of the worst forms of secrecy, Germany apparently is willing to surrender officially her strong ethical position of non-secrecy. Germany has justly prided herself on the development of her chemical industry. She is just learning the lesson that this same industry has developed into a money power that demands consideration in the formulation of ethical rules. The problems that are presenting themselves on all sides are grave and their proper solution a matter of great consequence not only to the present, but even more so to future generations. It is right that we should expose and combat evil whenever it exists, but in so doing let us not forget to apply our best energy in combatting the evil in our own camp. *E. K.*

Oil of Gaultheria.*

By *John Uri Lloyd.*

The first record of the therapeutical use of this oil, as is often the case with valuable medicines, is to be found in empirical medicine. The proprietary remedy, very popular about the beginning of this century under the name "Panacea of Swaim," or "Swaim's Panacea," introduced it.

This remedy gave added impetus to our Compound Syrup of Sarsaparilla, having become so popular as to force itself to the attention of the profession. The Sarsaparilla Compound of the name "Sirup or Rob Anti-Syphilitica" was closely associated with Swaim's Panacea and Ellis, 1843, after giving the formula of "Sirup Rob Antisyphilitica"[1] in his Formulary, p. 67, says: "The above preparation has been asserted, by the New York Medical Society, to be nearly identical with the noted Panacea of Swaim."

That oil of gaultheria was a constituent of Swaim's remedy and that it was brought into conspicuity therein, may also be seen from an analysis of Swaim's Panacea (by Chilton) recorded in the Am. J. Med. Sciences, 1829, p. 542. The following reprint from an anonymous writer in the American Journal of Pharmacy, 1831,[2] establishes the subject more clearly in that it gives a very fair description of oil of gaultheria as well as making a statement to the effect that it is the same as sweet birch oil, and showing further that many different plants yield the same oil.

Oil of *Gaultheria procumbens:* — "This is the heaviest essential oil of which we have any knowledge; for I have found it to be 1.17. This furnishes us with an easy mode of testing its purity. The wonderful success of Swaim's Panacea has brought this oil into great vogue with all venders of Catholicons, Panaceas, and Syrups of Sarsaparilla.

It appears to be a vegetable principle secreted in plants very widely separated by their natural affinities. The *Betula lenta* or

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* Compiled from records in the Lloyd Library by request of Prof. Edward Kremers. In the present paper no attempt is made to record the successive steps taken in the pharmaceutical history or the chemistry of the oil, only its early history in medicine and pharmacy being the subject of inquiry.

[1] Rob or Robb is a term applied by the Arabian physicians to fruit juices concentrated by evaporation.

[2] Amer. Jour. Phar., 1831, p. 199.

Sweet Birch secretes it in its bark; the Polygala paucifolia in its roots; the *Spiræa ulmaria*[3] the *Spiræa lobata* and the *Gaultheria hispidula* in their roots and stalks."

But that oil of wintergreen was used somewhat in domestic medicine before that date, and also by Dr. Wooster Beach, the forerunner of Eclectic medicine, is evidenced, for Dr. Beach in his American Practice of Medicine, Vol. III (1833, p. 201), concerning *Gaultheria*, "*Gautiera*" *repens*, states that "The oil relieves the tooth ache."

Antedating this paper, I have not succeeded in finding any reference whatever to oil of gaultheria being used in medicine, although the plants that contain it were generally recognized in pharmacy, the oil being distilled by primitive methods and known to druggists. Thus, as showing that even if used at all it could not have been important I need only refer to a few of the many authorities who would not have overlooked it.

AMŒNITATES ACADEMICÆ III, P. 14, 1787.

"*Gaultheria*, Kalm. (Gen. 487).— *Usus* foliorum in infuso, loca Theae. *Dixit* plantam Cl. Kalmius a. D. D. Gaulthier, Medico Canadensi, Botanico eximio." No reference to the oil.

BENJ. SMITH BARTEN. COLLECTIONS, ETC. PHILAD., 1798, p. 19.

"The *Gaultheria procumbens*, which we call Mountain Tea, is spread very extensively over the more barren, mountainous part of the U. S." etc. Does not mention the oil.

PHARMACOPŒIA OF THE MASS. MEDICAL SOCIETY. BOSTON, 1808.

No mention of the oil or plant.

W. P. C. BARTON, MAT. MED. I, P. 171, 1817.

Although he describes the medicinal virtues of Gaultheria in detail, does not mention the oil. However, as showing that oil of gaultheria was distilled preceding 1818 I will cite,

BIGELOW; AMER. MED. BOTANY, II, P. 28. BOSTON, 1818.

Pyrola umbellata (p. 15) is herein called Wintergreen.

Gaultheria procumbens (Partridge Berry):—"The aromatic flavor of the Partridge berry, which cannot easily be mistaken by those who have once tasted it, may be recognized in a variety of other plants whose botanical habits are very dissimilar.

It exists very exactly in some of the other species of the same genus, particularly in *Gaultheria hispidula;* also in *Spiræa ulmaria*

[3] Pagenstecher described oil of *Spiræa ulmaria* in the Repertorium f. d. Pharmacie, 1834, p. 337, and is credited by Procter with its discovery. But, we have in this paper a reference that antedates him three years. Still, this anonymous writer is preceded thirteen years by Dr. Jacob Bigelow as shown in our history.

and the root of *Spiræa lobata*. It is particularly distinct in the bark of Sweet birch, *Betula lenta*, one of our most useful and interesting trees.

This taste and odor reside in a volatile oil, which is easily separated by distillation. The essential oil of Gaultheria, which is often kept in our druggists' shops, is of a pale or greenish-white color and perfectly transparent. It is one of the heaviest of the volatile oils, and sinks rapidly in water, if a sufficient quantity be added to overcome the repulsion of the two heterogeneous fluids. Its taste is aromatic, sweet and highly pungent.

The oil appears to contain the chief medicinal virtue of the plant since I know of no case in which the leaves, deprived of their aroma, have been employed for any purpose. They are nevertheless considerably astringent, etc. etc.

The leaves, the essence and the oil of this plant are kept for use in the apothecaries' shops, ...

The oil, though somewhat less pungent than those of peppermint and origanum, is employed for the same purposes," etc. etc. . . . . .

In this connection, as indicating that the oil was unimportant, perhaps simply an article of curiosity to pharmacists it may be pointed out that the standard Dispensatory of J. R. Coxe, 1825, mentions oil of gaultheria, but does not say anything with regard to its value or use in medicine.

The edition of 1818 does not mention the plant or oil at all.

In studying the pharmacopoeial record of this oil, in connection with its materia medica and dispensatory history the fact becomes apparent that: oil of gaultheria was made in a primitive way by country people (as is still largely the case) about the beginning of this century.

It was introduced into the list of known essential oil bearing plants of America in the first (1820) pharmacopoeia, but was not described. Following this, such works as the American Dispensatories and American Materia Medicas gave the oil a complimentary position, but, it was of no importance until brought forward by the analysis of Swaim's Panacea. Not until long after 1820 did any European dispensatory or pharmacopoeia give it position.

Summary: Oil of Gaultheria was distilled for druggists previous to 1820, but no public description of the apparatus or method was printed.

The Pharmacopoeia of the United States, 1820, gave the first method of making it.

It was prominently introduced to the profession by the New York Medical Society, 1827, under whose auspices the oil was established as a characteristic constituent of Swaim's Panacea, the report being published in 1829.

No pharmacopoeial direction for making oil of gaultheria from any source whatever precedes the first (1820) Pharmacopoeia of the United States, and no reference to its being made from gaultheria or sweet birch preceding Bigelow, 1818.

Thus it is evident that while the plant gaultheria has the advantage concerning conspicuity of name, the same date of introduction and same reference (Bigelow) must be ascribed to both oil of gaultheria and birch.

Swaim's Panacea.

The important fact elucidated, by the foregoing history of oil of gaultheria, to-wit, that it first received recognition in this once popular remedy, leads to a few words concerning this compound. In the beginning of the present century a French proprietary remedy "Rob de Laffecteur" was very popular throughout France and her colonies. It was invented by a French apothecary Boiveau, who affixed to it the name of Laffecteur to make it popular. In 1811 certain New York physicians used this "Rob de Laffecteur" with success and Dr. McNevin, who obtained the formula from a French chemist, M. Allion, made its composition public.

Mr. Swaim, a bookbinder, was treated by Dr. A. L. Quackinboss and experienced great benefit from the remedy. Procuring the formula from Dr. Quackinboss, his physician, he modified it considerably and put the mixture on the market under the name Swaim's Panacea. This became very popular and at last attracted the attention of the medical profession, and by the analysis of Mr. Chilton (1829), under the auspices of the New York Medical Society, it was positively shown that Swaim had replaced sassafras by wintergreen oil and had also introduced corrosive sublimate into the mixture.

Persons interested in this formula and subject will find detail reports as follows:

American Journal of Pharmacy, 1827, p. 123.

American Journal of the Medical Sciences, 1829, 4, p. 530.

American Journal of the Medical Sciences, 1829, 5, p. 542.

The Assay of Belladonna Leaves.

By *W. A. Puckner.*

Of the many schemes for the estimation of the alkaloidal content of drugs the one proposed by C. C. Keller* possesses so many points of excellence that it may be said to have nearly replaced the former methods wherever applicable, and one of its good points is that, with but slight modifications, it can be applied to the assay of most alkaloidal drugs. The method is especially to be recommended in the assay of drugs containing alkaloids easily decomposed, in which, therefore, heat and long contact with solvents, acids and alkalies is to be avoided as much as possible and is therefore to be especially useful in the assay of such drugs as belladonna, henbane, etc. But, while the process is deserving the highest praise, yet there is an error inherent in the method consisting in the employment of an aliquot portion of the ethereal solution containing the alkaloids extracted from the drug; or to be more specific, in assuming when, for instance, 100 gm. of ether-chloroform are added to 10 gm. of drug, to this 5 cc. ammonia water and 5 cc. water are added, and if 50 gm. ether-chloroform are decanted that this portion will contain the alkaloids from 5 gm. of drug. That the solubility of ether in water, the solubility of water in ether, the absorption of solvent by the drug and most probably incomplete solution of alkaloid by the menstruum will here introduce an error must be conceded, but, although it is difficult to demonstrate how great this may be, I am convinced from a comparison with other methods and from concordant results obtained by this when the amount of solvent etc. was varied, that in the assay of such drugs as nux vomica, ipecac, etc., where the amount of menstruum in relation to drug and water used is large, the error introduced is small and may be neglected. In the assay of belladonna leaves it seemed that the error might be greater than in the examples just cited, since here, on account of the small amount of alkaloid contained in the drug, its greater bulk and absorbent power, the weight of drug operated upon must be increased as also the water, while a corresponding increase of ether-chloroform

* Proc. A. Ph. A. 43, p. 536; from Schweiz. Wochensch. f. Chem. u. Pharm., 1894.

will render the process rather cumbersome. Accordingly some experiments were undertaken to ascertain if such were the case, and in the following I wish to present the results obtained.

The assay, according to Keller's method, was conducted as follows:

To 20 gm. of belladonna leaves, dried over sulphuric acid reduced to a No. 60 powder and contained in an Erlenmeyer flask of about 200 cc. capacity, are added 150 cc. of chloroform-ether mixture (chloroform 25 cc., ether U. S. 125 cc.) and after standing a minute or two, the flask being well corked to prevent evaporation, 10 cc. ammonia water U. S. and the whole shaken at frequent intervals for one hour. At the expiration of this time, 10 cc. water is added, the mixture well shaken, allowed to stand until clear and then the clear supernatant liquid decanted into a graduated separatory funnel. From this solution the alkaloid is extracted with 1 p. c. hydrochloric acid, using 25, 15 and 10 cc. This acid solution, contained in a separator, is made alkaline with 5 cc. 10 p. c. ammonia water and immediately treated with successive portions of 25, 15 and 10 cc. of an ether-chloroform obtained by mixing chloroform 38 cc. and ether 12 cc. As a precautionary measure the 25 cc. of ether-chloroform are added to the acid solution and this then made alkaline with ammonia. The ether-chloroform solution is filtered through a small pellet of cotton, to retain any moisture, into a shallow beaker and evaporated at a temperature of 25° to 35°. When all has evaporated, the residue is dissolved in 5 cc. ether and again brought to dryness. In this residue the alkaloid is determined volumetrically by adding a slight excess of $\frac{1}{20}$ N acid, a little ether and a few drops of cochineal test solution, and after complete solution has occured and the ether, which is added to assist in the solution of the alkaloid, is dissipated, determining the excess of acid with $\frac{1}{20}$ N alkali.

Two samples, which were assayed by this method, gave the following results:

	1.	2.	3.	4.	5.	
Sample A.	0.35%	0.37%	0.33%	0.34%		Average 0.35%
Sample B.	0.56%	0.55%	0.50%	0.51%	0.55%	Average 0.534%

The variation in results shown by these figures being in excess of those noted when assaying other drugs by this method, it was decided to verify the assay by another method and if possible by one not containing the doubtful feature of using an aliquot portion. The method adopted is a modification of Keller's wherein all its

good qualities are retained, while the aliquot portion feature is eliminated. The procedure is as follows:

To 10 gm. of drug, dried and powdered as in the first method, contained in a flask of 75—100 cc. capacity, add 50 cc. of the light chloroform-ether mixture used in Keller's method and 5 cc. of 10 p. c. ammonia water, cork well and shake at frequent intervals for one hour. The mixture is now transferred to a small percolator, improvised by drawing out a test tube of about 50 cc. capacity, a rather narrow one (diameter about 20 mm.) being preferred, provided with a plug of cotton at the outlet, and the percolate received in a separator. When all has passed, a further 25 cc. of light chloroform-ether are poured into the flask and with it the remainder of the drug transferred to the percolator and when this has passed through, another 25 cc. are used in the same manner. The ethereal solution in the separator, containing the alkaloids from 10 gm. of drug, is now treated as outlined in the first method and the assay completed in exactly the same way. The results are:

	1.	2.	3.	4.	
Sample A.	0.34%	0.33%	0.33%	0.34%	Average 0.336%
Sample B.	0.53%	0.52%	0.52%	0.52%	Average 0.522%

While in a general way the results obtained by this method agree with those of the first, it is seen that the latter figures show a greater concordance among themselves, due no doubt to the avoidance of need for accurate measurement of volatile solutions as in Keller's process, and this certainly must be considered a distinct advantage of my method. I believe that the slightly lower results of my method are not due to imperfect extraction, but rather that the higher figures of the first are due to the fundamental error of the Keller method referred to before, my belief being based upon the fact that percolation with a further amount of menstruum removes no appreciable amount of alkaloid and also because a fluid extract prepared from the drug and assayed, by a method which I believe to be free from criticism or at least one which gives as high results as any, indicates an alkaloidal content agreeing more closely with the numbers obtained by the second process, thus:

Fluid Extract prepared from A assayed 0.334%
Fluid Extract prepared from B assayed 0.510%

I realize that my arguments in favor of the proposed modifications are open to adverse criticism and, in the main, the object of this

communication has been to show the excellence of the Keller method, giving as it does, fairly concordant results under trying conditions and it is only in the assay of bulky drugs and such where it is necessary to use relatively large quantities, as for instance with belladonna, henbane, etc., that these modifications should be adopted.

Laboratory of The Searle and Hereth Co.

Early Phases in the Development of Pharmaceutical Legislation in Wisconsin.*

By *Edward Kremers.*

Attention has been called to the repeated delays which the so-called druggists act met with in the common council. The last delay which this act was to meet was caused by the druggists themselves. As already pointed out, they objected to several provisions of the law drafted by the City Attorney and modeled after the New Hampshire law. It is of interest to note in this connection that the initiative in this case came from that classes of druggists who had begun the movement in September of the previous year. As is apparent from the signatures of the petition, the two groups of druggists who had acted separately only a few months before, now joined hands to prevent their calling from being made subordinate to another calling or from being controlled by the tools of politicians.

In *Document 32*, the Herold calls attention to a meeting to be held at the house of Mr. Otto A. Thiele on Sunday afternoon, Jan. 23, 1896. Invitations to this meeting seem to have been issued by Mr. Thiele and Mr. Enno Dorestan. The meeting was held and reported in the papers the following day. The original draft of the modified law as agreed upon by the druggists and a letter of transmittal signed by those present at this meeting were found with other documents in the City Clerk's office filed under date of Feb. 7, 1876. This is exceedingly fortunate, for previous to the finding of these documents and before the newspapers of this date had been looked up the most contradictory remarks were obtained from druggists themselves. The writer was informed that Mr. A. had presided at the meeting and that Mr. B. had acted as secretary.

* Continued from p. 141.

Mr. A., when called upon, flatly denied having been there, although the letter of transmittal since found at the City Clerk's Office seems to prove clearly by his signature that he was present. Mr. B. did not remember anything about the meeting, promised to look among his old papers for the minutes, but could find none. This incident—and many more similar in character could be added—clearly demonstrates with what grain of allowance personal reminiscences, unaided by substantial documentary evidence, must be taken. Fortunately we have the original draft of the druggists with the minor changes evidently by the City Attorney and the approved law [*Document 33*]. Mr. Thiele stated that the New York law served as a basis for discussion at the Sunday afternoon meeting. A comparison with the New York law can be made by consulting the text printed in the Proceedings of the American Pharmaceutical Association for 1872, p. 150. Such comparison will show that the New York law was not followed as closely by the druggists as was the New Hampshire law by the City Attorney.

A Bill [for an act] to regulate the practice of pharmacy and the sale of poisons, and to prevent adulterations of Drugs and medicinal preparations in the City of Milwaukee.*

[Preamble]

Whereas the safety of the public is endangered by want of care in the sale of poisons, whether to be used as such for legitimate purposes, or employed as medicines and dispensed on the prescription of physicians; and whereas the power of physicians to overcome disease depends greatly on their ability to obtain good and unadulterated drugs and skillfully prepared medicines, and whereas the class of persons to which the preparation and sale of drugs, medicines and poisons properly belong, known as Apothecaries, Chemists and Druggists or Pharmacists, should possess a thorough knowledge of the business and science of pharmacy in all its relations, therefore

AN ACT

TO REGULATE THE PRACTICE OF PHARMACY AND THE SALE OF POISONS, AND TO PREVENT ADULTERATIONS OF DRUGS AND MEDICINAL PREPARATIONS IN THE CITY OF MILWAUKEE.

The people of the State of Wisconsin, represented in Senate and Assembly, do enact as follows:

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* In order to economise space, the original manuscript with its changes (evidently by the City Attorney) and the bill as it passed the legislature were merged into one, The preamble of the druggists, naturally, is not included in the final product, the approved law. The original document was written in purple ink. Words or passages that were crossed out with black ink are enclosed in brackets; words or passages added in black ink are italicized. Capitalization and punctuation according to original manuscript.

§ 1. [Be it enacted] That it shall be unlawful in the city of Milwaukee for any person, unless a registered pharmacist, or registered assistant pharmacist, within the meaning of this act, except as an aid or apprentice, under the immediate supervision of a registered pharmacist, or a registered assistant pharmacist, to retail, compound or dispense medicines or poisons, except as hereinafter provided.

§ 2. Any person, in order to be registered in the meaning of this act, must either be a "graduate in pharmacy," a "practicing pharmacist," or a "practicing assistant pharmacist."

§ 3. Graduates in pharmacy must be such as have had three years experience in a store where the prescriptions of medical practitioners are compounded and to have obtained a satisfactory diploma or credentials of their attainments from a regularly incorporated college or school of pharmacy, either of the United States or of *a* foreign country [ies], and the degree of which shall be "Graduate in pharmacy." Practicing pharmacists, in the meaning of this act, within this city, shall be such persons only as at or prior to the passage of this act, have kept, and continue to keep open store for the compounding and dispensing the prescriptions of medical practitioners, and for the sale of Drugs and medicines. Practicing assistant pharmacists shall be such persons of not less than eighteen years of age, as at or prior to the passage of this act, have been, or may be employed in the compounding of prescriptions of medical practitioners in the store of a practicing pharmacist in this city, and shall furnish satisfactory evidence of their attainments and competency to the board of pharmacy, and hereafter no person except a graduate in pharmacy, within the meaning of this act, shall be qualified for registration, either as a registered pharmacist, or a registered assistant pharmacist, unless he shall have had three* years experience in a store, where the prescriptions of medical practitioners are compounded and shall have passed an examination before the Board of Pharmacy, hereinafter provided.

§ 4. On or before the first day of August 1876 the Apothecaries of the city of Milwaukee in a meeting shall nominate six of the most skilled pharmacists at that time engaged in said business in said city, out of w*h*ich number the mayor of the city of Milwaukee shall, within thirty days thereafter appoint three persons, one for one year, one for two years and one for three years, who shall constitute the board of pharmacy. Each year after, in a meeting of the registered pharmacists, two registered pharmacists shall be nominated out of which the mayor of the city shall appoint one [to fill vacancy] for the term of three years. The members of the Board shall, within thirty days after their appointment, individually, take and subscribe [before the clerk of the county Court in the county of Milwaukee] an oath *of office*, faithfully and impartially to discharge the duties prescribed by this act.

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* Four in the original. Change evidently made in Legislature.

They shall hold office until their successors are appointed and qualified, and in case of vacancy by removal from the city, ceasing to do business as a registered pharmacist or from any other cause, the mayor of the city shall fill such vacancies by appointment from the number of registered pharmacists of the city. The members of the Board shall organize for the transaction of business within one week after their appointment, *and annually thereafter* by the election [of a president, a treasurer and a secretary] *of one of their number as President and one of their number to act as Secretary and Treasurer.* The Board shall meet as often thereafter as necessary, at least once every month.

§ 5. The duties of the board of pharmacy shall be to examine all candidates presenting themselves to direct the registration by the secretary of all persons properly qualified or entitled under this act and to cause the prosecution of all persons violating its provisions. Pharmacists, applying to the board of examination, shall pay a fee of five Dollars, and upon passing a satisfactory examination, *and having otherwise complied with the provisions of this act,* the Board shall furnish a certificate to the applicant without additional charge. *From said five dollars each of* the members of the board shall be paid a compensation of one dollar [cash] for each examination.† All expenses arising under this act shall be paid out of the moneys received [for fees and penalties hereinafter prescribed] *by said board,* and any surplus moneys [remaining at the close of the official term of the treasurer shall remain with the board or with the successor of the treasurer of the board and shall be delivered to the library fund of the association of the registered pharmacists at the close of every official year, after the said association is incorporated, to be used for the increase of the library.] *may be used or appropriated for such purposes as the registered pharmacists of said city, in their annual meeting, may from time to time determine.*

§ 6. The duties of the secretary *and treasurer* shall be to keep a book for the registration of pharmacists and assistant pharmacists at some convenient place to be designated by the board of pharmacy, of which he shall give due notice through the public press in the city of Milwaukee, and in which shall be entered, under the supervision of the board of pharmacy, the names, titles, qualification and places of business of all, coming under the provisions of this act; and it shall be the duty of all such persons to see that they are registered within a period of thirty days after the organization of the board of pharmacy. The fee *to be paid to the Board* for the registration of graduates, practicing pharmacists, and assistant pharmacists, *under this act without examination,* shall be one dollar, and it shall be the duty of every person registered to have his registration renewed every year, the fee

† Crossed out, and "registration" substituted for it in black ink. In the printed document, however, the word examination again occurs.

for which shall be fifty cents; and upon changing his place of business or engagement, to notify the secretary within thirty days. The secretary shall be paid a compensation for each first registration fifty Cents and for each renewal, twentyfive Cents, out of the moneys received for registrations. The secretary shall make all necessary alterations in the register and notify all persons who shall not have renewed their registration to do so within thirty days, for which [this person has to] *services the party notified shall* pay a fee of fifty cents to the [secretary] *board*, and in case [of] no answer is received before the expiration of such notice, [such] *the* name *of the party so notified* shall be erased, unless an excuse, satisfactory to the board, be presented; Provided always, that the said name shall be restored *only* on payment of five dollars to the [secretary of the] board within one year. The Secretary shall *receive all moneys belonging to the board and* give receipts [for all moneys received by him and pay the surplus moneys after taking out his compensation to the treasurer of the board.] *therefor.* He shall disburse the same under the direction of the board; and [he] shall keep an accurate account, which shall always be subject to the inspection of the board, he shall give good and sufficient bonds, payable to the board of pharmacy, for the faithful performance of his trust, which shall be satisfactory to and approved by the board of pharmacy. * [§ 7. The secretary *He* shall *also* report annually to the mayor of the city upon the conditions of pharmacy, together with the names of all registered pharmacists and assistant pharmacists, duly registered under this act.

† § 7. Any person, not a registered pharmacist, who shall, thirty days after said board is organized, keep open shop for retailing or dispensing of drugs, medicines or poisons or who shall use the title of registered pharmacist or registered assistant pharmacist, shall, for every such offense, be deemed guilty of a misdemeanor and on conviction shall be liable to a penalty of not less than fifty dollars, nor more than two hundred dollars.

‡ § 8. Any registered pharmacist, who shall, knowingly intentionally *or* fraudulently adulterate or cause to be adulterated any drugs, chemicals or medicinal preparations, intended for medical purposes, shall be held guilty of a misdemeanor, and upon conviction thereof, shall pay a penalty not exceeding five hundred dollars nor less than fifty dollars, and shall [pay a] forfeit to the city of Milwaukee all the articles adulterated.

** § 9. From and after the first day of August 1876, it shall be unlawful for any person in the city of Milwaukee to retail any poisons enumerated in schedules A and B, appended to this act, without distinctly labeling the bottle, box, vessel, or paper and wrapper or cover in which said poison is

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* In the original document this sentence preceeded the one before it in the final act.
† § 8 in original document.
‡ § 9 in original document.
** § 10 in original document.

obtained, with the name of the article, the word "poison," and name and place of business of the seller. Nor shall it be lawful for any person to sell or deliver any poison enumerated in schedules A and B, to any person unless, on due inquiry, it is found that the person is aware of its poisonous character, and that it is to be used for a legitimate purpose. Nor shall it be lawful for any person to sell or deliver any poison included in schedule A, without, before delivering to the buyer, making or causing to be made an entry in a book kept for that purpose only, stating the date of the sale, the name and address of the buyer, the quantity of poison sold, the name of the poison, for what purpose, and the name of the dispenser. Said book to be kept always open for *the* inspection [by] *of* the proper *city, county or state* authorities and to be preserved at least five years. The provision of this section shall not apply to the dispensing of Physicians prescriptions, but all prescriptions shall be carefully filled by the pharmacist, and numbered in the order in which they are dispensed, such prescriptions must be preserved at least five years and a copy must be furnished by the pharmacist, if demanded by either the writer or the purchaser, for which copy no fee shall be exacted.

* § 10. Nothing in this act shall apply to, or in any manner whatever interfere with the business of any practitioner of medicine who does not keep open shop for the retailing, dispensing, or compounding of medicines and poisons, nor prevent them from administering or supplying their patients such articles as may seem to them fit and proper nor shall it interfere with the business of wholesale dealers in drugs and chemicals in sales to retailers and physicians or for use in the arts, nor with the making and dealing in proprietary remedies, popularly called "patent medicines," *nor shall the provisions of this act apply to practicing homeopathic physicians who do not keep a retail apothecary store.* Schedule A—Arsenic and its preparations, corrosive sublimate, white precipitate, red precipitate, bin-iodide of mercury, cyanide of potassium, hydrocyanic acid and strychnia. Schedule B—All poisonous vegetable alkaloids and their salts, Aconite, Belladonna, colchicum, conium, nux vomica, henbane, savin, ergot, cotton root, cantharides, digitalis and their pharmaceutical preparations, croton oil, chloroform, chloral hydrate, sulphate zinc, sugar lead, mineral acids, carbolic acid, oxalic acid, opium and its preparations, except paregoric and all preparations of opium containing less than two grains to the ounce.

[§ 12. All acts and parts of acts in conflict with this act are hereby repealed]

** § 11. *This act shall take effect and be in force from and after the first day of August, A. D. 1876, and all acts and parts of acts contravening the provisions of this act are hereby repealed.*

Approved March 10, 1876.

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* § 11 in original document.
** § 12 in modified document.

MONTHLY REVIEW.

Pharmaceutical Technique.

A Convenient Gas Generator and Device for Dissolving Solids.* — After discussing the faults of the gas generators commonly used, J. W. Richards

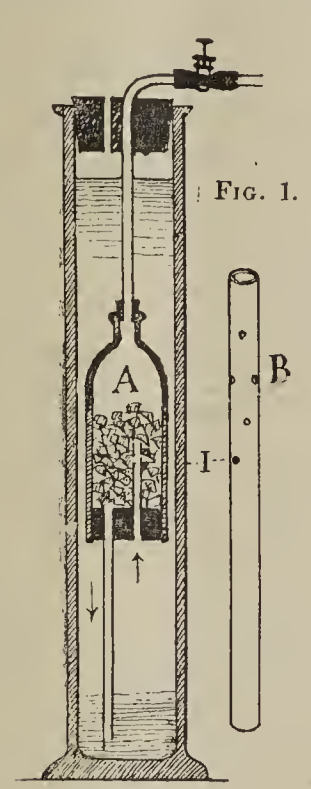

FIG. 1.

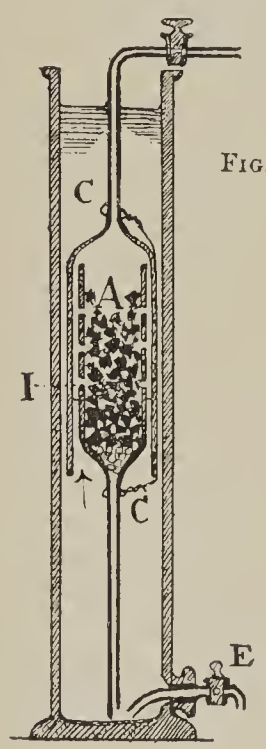

FIG. 2.

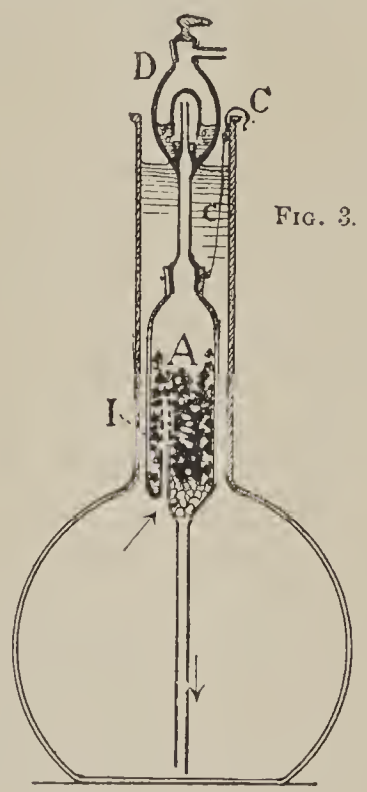

FIG. 3.

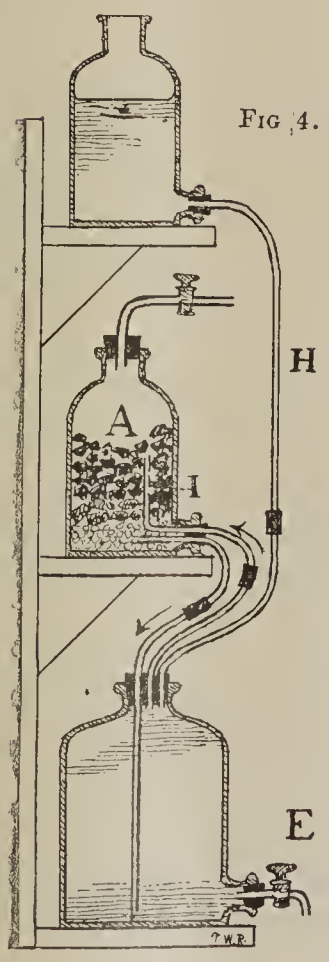

FIG. 4.

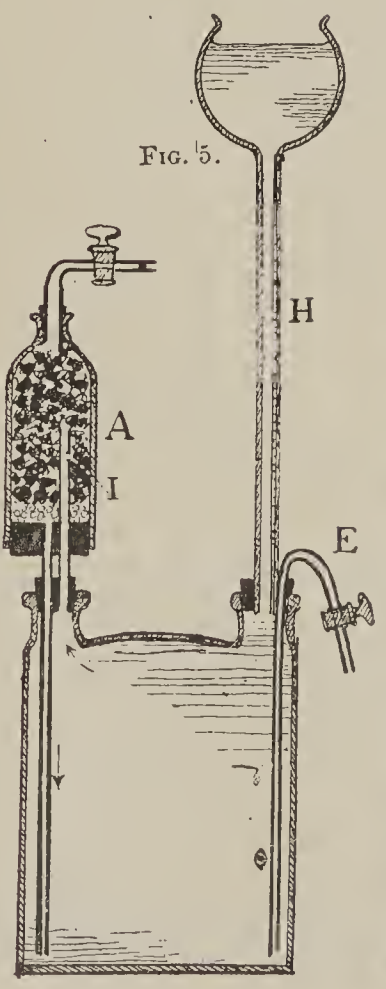

FIG. 5.

FIG. 6.

FIG. 7.

describes a very useful and simple apparatus of which he has devised several forms. The accompanying figures explain the working of the generator. The vessel containing the solid reagent is suspended half-way in a tall jar containing the liquid, in such a way that the heavy solution produced by the reaction is removed by a long tube reaching quite to the bottom of the jar. The fresh liquid is drawn up through a tube extending several centimeters into the heart of the generator (Figs. 1, 3, 4, and 5), or else supplied through holes high up in its walls (Fig. 2). The circulation continues long unimpaired, and hence the evolution of gas remains remarkably constant.

Several forms of the generator are given below. That depicted in Fig. 1 has the advantage of ready construction from materials at everyone's command. The small tube inside for delivering the liquid may advantageously be supplied with a few fine holes as is shown in the enlarged detail at the right. The form shown in Fig. 2 consists wholly of glass, the two parts being held together by a platinum wire. It is sometimes advisable to use very dilute solutions of hydrochloric acid in the generator, because very dilute solutions yield a gas which is scarcely at all contaminated with acid. For this requirement, the arrangements shown in Figs. 3, 4, or 5 are well adapted. The third simply replaces the cylinder of the earlier forms by a long- and wide-necked flask, while the last consists of an easily made combination of a small bottle deprived of its bottom, a Wolff bottle, some tubes, and a bulb or funnel. The fourth is an obvious adaptation of the same idea. The fourth and fifth have the advantage of giving almost any pressure desired. The principle of giving a saturated solution opportunity to remove itself by virtue of its increased weight may also be used to conduct the rapid and automatic dissolving of crystals; and if the lower part of the receptacle for the solid is plugged with glass wool, the solution may be filtered while it is being made. Two forms of this device are shown in Figs. 5 and 6.

[Amer. Chem. Jour., 20, p. 189.] *Oswald Schreiner.*

Chemistry.

Iodometric Estimation of Antipyrine.† — According to J. Bougault, one molecule of antipyrine combines under certain conditions with exactly one molecule (two atoms) of iodine. To an alcoholic solution of antipyrine some corrosive sublimate is added and a standardized solution of iodine is run in from a burette till the appearance of a persistent yellow tint. 1.351 gm. iodine correspond to 1 gm. antipyrine. Reversing the process, a solution of iodine can be standardized with antipyrine, which is very easily procured in a perfectly pure state. [J. Ph. Chim., 1898, p. 161.] *H. M. Gordin.*

* The Review is indebted to the editor of the American Chemical Journal for the use of the accompanying cut.

† At my request Dr. H. M. Gordin, now engaged at the University of Michigan, has consented to prepare for the Pharmaceutical Review, from time to time, abstracts of current literature upon the alkaloids, but only undertaking to give notice of the original reports of some of the more valuable of the researches in this field.—*A. B. Prescott.*

Preparation of Homatropine. — According to E. Täuber, homatropine can be easily made by passing a current of gaseous hydrochloric acid over a mixture of tropine and amygdalic acid heated to about 110—120° C.

[Pharm. Centrh., 39, p. 133.] *H. M. G.*

Solubility of Theobromine in Solutions of Trisodium Phosphate. — The solubility of theobromine in trisodium phosphate, according to Brissemoret, increases with dilution, a fact which is due to the dissociation of the phosphate in the presence of water. The alkali liberated in this dissociation combines with the theobromine.

[J. Ph. Chim. 1898, p. 176.] *H. M. G.*

Anagyrine.—This alkaloid is found together with cytisine in the seeds of *Anagyris fœtida*. The analysis of the platinum, gold and mercury double salts of anagyrine, indicate for it the formula $C_{15}H_{22}N_2O$. Its behavior with alkyl iodides and nitrous acid is that of a tertiary base. It seems to be related to the butyl cytisines.

[Pharm. Journ. 1898, p. 88; from Pharm. Ztg.] *H. M. G.*

Quinine Nitroprussiate.—This compound, which is formed on the addition of sodium nitroprussiate to neutral solutions of quinine salts, is much less soluble in water than the other cinchona alkaloids. This fact can be made use of in detecting traces of other alkaloids in quinine sulphate. The quinine being precipitated with sodium nitroprussiate, the filtrate will not give a precipitate with ammonia if the quinine be perfectly pure.

[Bull. de Soc. chim. 1898, p. 45.] *H. M. G.*

Preparation of Codeine. — 285 grms. morphine and 132 grms. nitrosomethylurethane are dissolved in 1 kgm. methyl alcohol. To this is added, slowly and continuously shaking, a solution of 50 grms. potassium hydroxide in 800 grms. methyl alcohol. The alcohol is then distilled off and the residue extracted with benzol. On evaporation of the benzol the codeine crystallizes out. The potassium hydroxide can be replaced by sodium hydroxide, ammonia or an organic base like pyridine. Instead of the alcohol, water can be taken. [Rép. Pharm., 1898, p. 123.] *H. M. G.*

Detection of Atropine and Hyosciamine in Urine. — 300 cc. of urine is treated, after eight days standing, with ammonia and the alkaloids shaken out with chloroform. The chloroform is then evaporated off and the residue treated with a drop of acidulated water and a trace of Marmé's reagent (10 grm. potassium iodide, 5 grm. cadmium iodide, in 10 cc. water) and the mixture stirred till it is clear. In the presence of atropine or hyosciamine small well-formed crystals will be seen.

[Chem. Centrbl., 69, p. 225; from Bull. de l'Acad. royale de méd. de Belg.] *H. M. G.*

Detection of Alkaloids.—Veratrine.[1] Three or four drops of a 1 p. c. solution of furfurol are mixed with 1 cc. of concentrated sulphuric acid in a test tube and 3—5 drops of this mixture are poured carefully upon the substance to be tested. A dark-colored streak proves veratrine. On mixing, the liquid becomes dark green, after awhile blue and then violet.

Colchicine.[2] Some colchicine is rubbed up with about 0.25 grm. oxalic acid; 1 cc. sulphuric acid is then added and the mixture warmed on an oil bath in a small closed tube for about an hour to 120° C. On now adding water, the mixture becomes clear and assumes a yellow color. Alkali colors it red and careful acidulation changes this red color to pale yellow. Chloroform extracts from the mixture a yellow dye. On evaporating the chloroform, a yellow resinous residue is left which is colored reddish-violet by nitric acid (sp. gr. 1.4) and raspberry-red by concentrated sulphuric acid. Addition of potassium nitrate to the mixture colors it red and this color soon changes to greenish-yellow. Ptomaines do not show this reaction.

As reagents for some alkaloids, A. L. Bronciner[3] uses potassium sulphoruthenate (1 grm. in 20 cc. conc. H_2SO_4) and ammonium sulphouranate (1 grm. in 20 cc. conc. H_2SO_4), both of which give characteristic color reactions with many alkaloids.

The application of heat is recommended by G. Bruylants[4] in carrying out some reactions with the opium alkaloids, and a list is given by the author showing the different shades produced at ordinary temperature as well as on heating.

According to Sonnié-Moret,[5] cocaine in toxicological researches is best detected by examining under the microscope the precipitates formed with gold chloride or picric acid.

In carrying out van de Moer's[6] reaction for cytisine, K. Gorter[7] finds the best proportions of the ingredients to be 0.2 cc. of a 5 p. c. solution of ferric chloride and 5 cc. of a 0.05 p. c. solution of hydrogen peroxide for every 7.74 mg. of cytisine. On warming this mixture with cytisine, a blue color appears even in the presence of only 0.05 mg. of cytisine. Other alkaloids do not show this reaction.

[Zeitsch. anal. Chem., 1898, p. 61.] *H. M. G.*

Lycorine and Sekisanine.—From *Lycoris radiata* herb two alkaloids were isolated by K. Morishima: lycorine and sekisanine. Lycorine, $C_{32}H_{32}N_2O_8$, crystallizes from alcohol in colorless polyhedric crystals, which become yellow at 235° C. and are decomposed at 250° C. The alkaloid is hardly

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[1] G. Laves. Pharm. Ztg., 37, p. 338.
[2] E. Barillot. Bull. Soc. Chim., 3 sér., 11, p. 514.
[3] Pharm. Zeitsch. f. Russland, 28, p. 778.
[4] Ann. Pharm. 1895; from Pharm. Centralh., 36, p. 284.
[5] J. Pharm. Chim. [5], 27, p. 390.
[6] Zeitsch. Anal. Chem., 34, p. 648.
[7] Arch. Pharm., 233, p. 527.

soluble in water and difficultly soluble in alcohol, chloroform or ether. From acid solutions it is precipitated by most alkaloidal reagents. Characteristic is the behavior of lycorine with potassium permanganate, which gives a brown precipitate in neutral solutions of the alkaloid, but in excess of hydrochloric acid this precipitate dissolves with a blue fluorescence. Lycorine hydrochloride, $C_{32}H_{32}N_2O_8.2HCl+2H_2O$, forms colorless shining crystals melting at 208° C. Taken internally, lycorine produces vomiting and purging.

The second alkaloid, sekisanine, $C_{34}H_{36}N_2O_9$ or $C_{34}H_{34}N_2O_9$, crystallizes from aqueous alcohol in long colorless crystals, melting at 200° C. It is odorless and tasteless, hardly soluble in water, difficultly soluble in ether, benzol or chloroform, quite soluble in alcohol. While most alkaloidal reagents precipitate it potassium permanganate does not produce any fluorescence. Physiologically it is inactive. [Chem. Centrbl., 69, p. 254.] *H. M. G.*

Strophanthus Kombé. — It was recently demonstrated (see p. 144) by H. Thoms that the seeds of *Strophanthus hispidus* D. C. contain choline and trigonelline. The author has more recently isolated the same bases from the seeds of *S. Kombé* according to the same methods previously employed.

[Berichte, 31, p. 404.] *E. K.*

Assay of Bitter Almond Water. — The third edition of the German Pharmacopœia directs that five drops of officinal potassa solution be added to 10 cc. of the water previous to titration. However, when the strength of the bitter almond water is greater than that required by the D. A.-B. III, the five drops of potassa solution do not suffice to convert the hydrocyanic acid into potassium cyanide. In this case A. Stood obtained varying results. Correct results were obtained when ten drops were used. Inasmuch as a slight excess of the alkali is immaterial a corresponding change in the titration is suggested. [Apt. Ztg. 1898, p. 43.] *E. K.*

A New Reaction for Santonine. — 10—20 mg. of santonine are dissolved in 2 g. of concentrated sulphuric acid with the aid of a gentle heat, and then 2 ccs. of a 1 p. c. cerium sulphate solution, containing 2 p. c. of sulphuric acid, added drop by drop. The cherry-red mixture is allowed to cool, whereby it turns turbid, and 8 cc. of water are then added. A fine violet-red precipitate results, small dark particles appearing simultaneously. The whole mixture is now divided into three portions, to one of which an excess of carbolic acid is added; while the aqueous layers remain colorless, the carbolic acid turns red. Upon shaking a second portion with ether, no color is produced. To the third portion amyl alcohol is added and the mixture shaken. The amyl alcohol which will have assumed a light brown color is removed to a dry test-tube and phosphorus trichloride gradually added; the solution will assume a fairly stable violet color.

[Pharm. Post, 1898, p. 29.] *R. F.*

Cyclic Sulfonals.—Four new sulfonals have been prepared by Wallach and Borsche. They are pentanone-sulfonal, $\begin{matrix}CH_2.CH_2\\ |\\ CH_2.CH_2\end{matrix}>C(SO_2C_2H_5)_2$, methyl pentanone-sulfonal, (β), methyl hexanone sulfonal, (β), heptanone sulfonal. The manner of preparation is like that of sulfonal from acetone. All four compounds are crystalline and difficultly soluble in water. Whether these new compounds will be introduced into our materia medica remains to be seen. They certainly ought to constitute interesting material for physiological investigation. [Berichte, 31, p. 338.] *E. K.*

Esters of Rhodinol (Geraniol.)—The term rhodinol in this case is applied to the alcohol, $C_{10}H_{18}O$, found in rose oil by Eckart while working in Poleck's laboratory, and which is more commonly designated geraniol.*

E. Erdmann reports on several new esters of this alcohol prepared according to his brother's method with acid chlorides in the presence of dry pyridine.†

In addition to the acetate and benzoate already known, he prepared the butyrate, the isobutyrate, the isovalerianate and the palmitate. All of these are of no special interest because they are liquid and since with the increasing molecular weight of the acid the agreeable odor of the ester disappears more and more.

The ester, or rather the pseudo ester of opianic acid, however, crystallises readily. It is prepared by heating equal parts of alcohol and acid to about 130—135° for half an hour and purifying the product first with 5 p. c. soda solution, then by recrystallization from petroleum ether and finally from alcohol. The ester melts at 48.5° and is supposed to have the formula $(CH_3O)_2C_6H_2<\begin{matrix}CH——O.C_{10}H_{17}.\\ \quad\quad >O\\ CO\end{matrix}$ It is not considered useful for the identification of small quantities of "rhodinol" in volatile oils, but rather as a means of preparing pure "rhodinol" for scientific purposes. Linalool forms a similar ester but this could not be crystallized.

[Berichte, 31, p. 360.] *E. K.*

Sterilization with Formaldehyde. — In the December number of the Johns Hopkins Hospital Bulletin, H. O. Reik gave an account of sterilization experiments with formaldehyde gas. More recently, he has described an apparatus 7x12x12 inches, giving an air space of little more than 1000 cubic inches. A Schering lamp is used in vaporizing the pastilles. Not only can metallic surgical instruments of steel, aluminium or nickel be perfectly sterilized without any apparent detriment whatever, but

*) See this journal p. 109.
†) Journ. f. pr. Chem. 56, p. 14.

ivory, hard and soft rubber utensils as well. It would seem to be more or less generally applicable and ought, therefore, to prove serviceable in the sterilization of minor articles whether surgical or not.

[Johns Hopkins Hospital Bull., 9, p. 82.] *E. K.*

Botany and Pharmacognosy.

Starch in Opium.—The January report of the firm of W. Kothe, Halle, states that although every effort has been made to obtain the best opium by dealing with reputable dealers of Smyrna, that the Asia Minor article has more recently come to contain considerable quantities of starch. This has always been true of Persian opium. The influence of this adulteration in the preparation of remedies desired to exert a definite action is pointed out, and the easy possibility of over doses, should an article of good quality be used, is indicated. [Pharm. Zeit., 43, p. 122.] *R. H. T.*

Fifty Years Ago.—In 1848, guttapercha was first introduded into Europe. After Schoenbein and Böttger in 1846 independently discovered gun cotton, in 1848 Böttger found out that it was soluble in a mixture of ether and alcohol, this solution, collodion, having since come into use for many surgical and technical purposes. In 1848, the physiological activity of caffeine on the nervous system first found notice in medical periodicals. In this year, the first importations into Europe of kousso flowers from Abyssinia, of Kamala powder from the East Indies, took place. Patchouli herb was first introduced into Europe from the East in this year. According to H. Vogel, not only these but numerous other events of importance to pharmacy and medicine rendered this year memorable.

[Apoth. Zeit. 13, p. 24.] *R. H. T.*

Acacia horrida.—This species, according to F. Gessort, yields a gum related to gum arabic and also furnishes a useful product in its bark which is very rich in tannin and is used in tanning in the southwestern part of Africa. The wood is hard and is used for posts. The ethereal oil from the flowers is very pleasing and might find use in perfumery.

The tree is 20 to 25 ft. high with a stem 1 to 1½ ft. thick, covered with a dark gray bark. The smooth branches bear large white, straight thorns, the angular branches have bi-primate leaves. The leaflets are small, linear and blunt. The long stemmed, yellow inflorescence is spherical and the flowers, opening in January or February, have an agreeable odor. The pod has an elongated sickle-form, is smooth, leathery and contains many seeds. In South Africa it occurs along the banks of streams.

[Apoth. Zeit. 13, p. 93; from Zeitsch. f. trop. Landwirthsch., 1898. No. 1.] *R. H. T.*

Rhubarb.—In an investigation of *Rheum officinale* and *R. rhaponticum*, L. E. Sayre observes that the starch grains of the former average in diameter 0.02646 mm., whereas the latter are 0.0216 mm., that the calcium oxalate crystals of the Chinese average in diameter 0.0716 mm., whereas the rhaponticum are 0.0683 mm. On treating these two powders with ammonium hydrate, the Chinese rhubarb turns a dark brick-red color, while the rhaponticum exhibits a distinct salmon-red shade. Referring to *Rumex hymenosepalus* as a possible adulterant, the author states that this is distinguished by the size and form of the starch grain, also the powder turning brown upon treatment with ammonia water.

[Am. Journ. Pharm., 70, p. 129.] *H. K.*

Liming of Nutmegs.—Tschirch claims that the lime layer found on the surface of nutmegs does not render the nuts incapable of germination, simple thorough drying sufficing to bring about that result. Another supposition indicated that this lime layer is intended as a protection from the attacks of insects. The lime water in which the nuts are placed penetrates but a few cell layers into the nutmeg and within a few minutes after the nut comes into the air, a layer of calcium carbonate is formed over the surface. Nuts with a lime coating and without were exposed to the attacks of *Sidodrepa panicea* L., one of the commonest and most destructive pests. After six months all nuts not provided with the lime layer were gnawed and but one of those having a lime coating. The action of the lime is not chemical, but purely mechanical, the powder held by the wooly covering of the beetle clays up its breathing pores, chewing apparatus and reproductive organs, finally rendering the insects incapable of performing the functions trusted to these different organs. Therefore, liming and a frequent repetition of the process is advised.

The author remarks that for objects in collections mercury is the best protective. A few drops in the bottom of the containers protecting for a long period against the usual pests.

[Schweiz. Wochensch. f. Chem. & Pharm. 36, p. 21.] *R. H. T.*

The Wood-oil Tree of China.—According to Augustine Henry, the *tung-yu* of the Chinese is invariably known to English-speaking people in the East as wood-oil. The latter is expressed from the seeds of *Aleurites cordata* Steud (Syn. *Elæococca cordata* Blume; *Dryandra cordata* Thunb., etc.). The Chinese use the word *Tung* in a generic sort of way to indicate a number of trees, all characterized by large leaves. For example, the *tung* referred to in the Chinese classics, now known as *pao-tung* or *peh-tung*, is *Pawlonia imperialis* S. et Z. The *wu-tung* is *Sterculia platanifolia* Linn. f. The *tze-tung* is *Erythrina indica* Lam. Concerning the *hai-tung*, nothing is known with certainty.

In the south of China the fruits of both *Jatropha curcas* L. and *Amoora*

Rohituka W. et A. yield an oil by expression which is used for lighting purposes. The wood-oil tree is known as *tung-tse*, *yu-tung*, or *ying-tze-tung*. Its product is a peculiar oil, *sui generis*, which is scarcely ever used for lighting, but is universally employed in China for varnishing wood-work, which it preserves to a marvelous degree. The myriad fleets of native craft on the inland waters of China are always varnished with this oil. The wood-oil mixed with lime forms chunam, extensively used in calking. The oil is poisonous internally, but externally apparently has no irritating effect on the skin. The product of the burning of wood-oil is the basis for the best India ink, which is very extensive even in China. The wood-oil is recorded as being obtained from all of the provinces of China except those north of the Yangtse valley. It occurs also in the islands of Hainan and Formosa and in Japan. The production is enormous and there is no evidence that any export occurs to Europe or America. There should be no difficulty, the author says, in introducing the tree into cultivation in the United States. The wood-oil tree grows freely and spontaneously in the barren, rocky mountains of Hupeh at elevations of from 500 to 4000 feet above sea-level and where there is an annual range of temperature from 32 to 100 degrees Fahr. In Hainan and Formosa it bears a tropical climate. The tree is ornamental besides being useful and it might be tried in rocky, barren soils in the southern and central sections of the United States. There seems to be a need of making further investigations with this wood-oil. Samples may be easily obtained from Shanghai.

[Am. Dr. and Pharm. Rec., 32, p. 33.] *H. K.*

On the Distribution of the Alkaloids in the Cinchona Plant. — After reviewing the history and literature of the subject, Ed. Schaer discusses an article by J. P. Lotsy, which appeared as an appendix to the report of the government cinchona plantation of Java, 2d quarter, 1897.

Unfortunately, only the results are given and no mention is made of the methods employed. A general resumé of results is given as follows.

Alkaloid is found in parenchyma and not in sieve-tissue. It occurs in green cells.

The alkaloid is a normal content of living parenchyma cells, also in living cells that differ little from the parenchyma form.

Cells containing oxalic acid contain no alkaloid.

In general (there are exceptions) in young organs such as leaf-parenchyma and the vegetative point, we find the alkaloid dissolved in the cell-sap. In older portions, as the secondary bark, on the contrary, it is solid and amorphous.

The alkaloid is most frequently found in the form of tannate. Whether it is also present in combination with other acids has as yet not been determined.

As a rule, very active cells, such as those of the cambium and the outer portion of the vegetative point, bear no alkaloid. Near these centers of activity, however, it is abundant.

Much more alkaloid is found in the vicinity of the vegetative point of the stem than in that of the root.

[Arch. d. Pharm., 235, p. 647.] *A. Van Zwaluwenburg.*

Curare and Curare-Alkaloid. — Curare is the general term applied to the various kinds of arrow-poisons prepared and used by the Indian tribes inhabiting the territory drained by the Amazon and the Orinoco and their tributaries.

R. Boehm has made an exhaustive study of three forms of commercial curare and a few curare barks.

Tubo-curare, sometimes called para-curare, is the only form known to commerce at the present time. It is received packed in *tubos* or tubes of bamboo weighing from 275 to 350 grms. each. This form can be easily distinguished from the others even when removed from its package. The author finds large crystals of quercite always present, visible with the naked eye. Several alkaloids were separated from this variety, all closely related to the toxic agent to which the author gives the name tubo-curarine.

Calabasa-curare is the name applied to a variety formerly the most common, but which has now completely disappeared from the market. It was shipped mostly from Venezuela packed in gourds, hence its name. The author calls its active principle curarine.

The third variety (Topfcurare) is packed in small cups of unbaked clay, and is made by different tribes of Indians of the upper Amazon from the bark of *Strychnos Castelnea* Wedd. It varies widely in strength and is commonly adulterated.

Though all of the curares are supposed to be extracts of plants belonging to the genus *Strychnos*, they differ widely in intensity of toxic activity and chemical properties. Of the three toxic alkaloids that of the cup-curare, proto-curarine, is the most active.

Three varieties of curare-bark were examined. Two of these are composed of cork only which, however, are more rich in curarine than the third, which is a complete bark. The author concludes from the study of these barks that the curarines are formed from the related alkaloid curine and accumulated in the cork-tissue of the bark.

[Arch. d. Pharm. 235, p. 660.] *A. Van Z.*

Practical Pharmacy.

Preservation of protargol solutions. — In connection with the statement made by Weutscher in the D. Med.-Ztg., 1898, No. 5, that 1½ p. c. protargol

solution darkens even in brown glass when exposed to light, *E.* calls attention to the fact observed by him that in black bottles the solution can be kept unchanged for months. [Pharm. Ztg., 43, p. 173.]

Stili Resinosi. — For the removal of hairs, Unna recommends pencils made from resin to which 10 p. c. of yellow wax has been added. The pencils are applied by warming the end to the melting point (about 60°), pressing it lightly upon the spot from which the hairs are to be removed, allowing it to cool, and then pulling out the hairs with quick jerk. The pain caused by removing several hairs in this manner is said to be no greater than when a single hair is extracted by means of an epilation forceps.

[Monatsh. f. prakt. Derm., 1898, I; Therap. Monatsh., 1898, p. 119.] *R. F.*

Note on the Assay of Opium. — B. S. Proctor has prepared a modification of the Br. Ph. method of opium assay, doing away with the washing of the liquid in the flask with ether. To this end the opium is extracted and the mixed alkaloids are precipitated in the manner indicated in the Br. Ph.; the precipitate is collected on a previously dried and tared filter, washed first with a saturated aqueous morphine solution, then once with distilled water, and dried at 100° C. to constant weight. The narcotine is removed from the morphine by washing with petroleum benzin until a drop leaves only a negligable residue upon evaporation. The residue on the filter, after a second drying, is weighed as morphine. The process can of course be applied to preparations of opium as well as to the drug itself.

[The Chemist and Druggist, 1898, p. 20.] *R. F.*

Resin of Podophyllum. — Edgar J. Millard calls attention to the fact that English manufacturers are supplying a resin obtained from Indian podophyllum (*P. emodi*) under the title of podophyllum resin, British Pharmacopœia, and offers the following as the best means of detection: — "To 0.4 gm. of the resin in a test-tube add 3 cc. of diluted alcohol (sp. gr. 0.920) and 0.5 cc. of solution of potash B. P.; shake by rotating the test-tube. In the case of the Indian resin, the mixture assumes in a few seconds a semi-solid gelatinous mass, so that the test-tube can be safely inverted. If this does not occur quickly, the mixture should be heated until it just begins to boil, and when cold it will be found to have gelatinized. The official resin similarly treated gives a dark fluid that shows no signs of gelatinizing even after standing for days."

[Pharm. Journ., 1898, p. 304.] *A. B. S.*

On the Assay of Belladonna Plasters. — Carl E. Smith has examined the belladonna plasters of the market and recommends a method of assay based upon the process of S. W. Williams* substituting however volumetric acid for Mayer's solution in the final titration of the alkaloids. The method is in outline as follows: The plaster is cut in strips and the mass disinte-

* Proc. A. Ph. A., 1890, p. 155.

grated and partially dissolved by stirring with chloroform made alkaline with ammonia water. The chloroform mixture is decanted and the cloth washed with successive small portions of chloroform. The rubber is precipitated from the chloroform with alcohol, the solution decanted and the rubber re-dissolved with chloroform and reprecipitated with alcohol repeatedly to recover any alkaloid retained in it. The alkaloid is washed out from the united alcohol-chloroform solutions with acid water, the acid solution of alkaloid made alkaline with ammonia and extracted with chloroform. After destillation of the chloroform the alkaloidal residue is titrated with volumetric acid solution.

[Am. J. Ph., 70, p. 182.] *W. A. P.*

Fluid Extract of Liquorice.—In a paper read before the Pharm. Soc. of Edinburgh by Peter Boa, some interesting comparisons are made upon the U. S. and Br. pharmacopœial methods of manufacture of fluid extract of liquorice.

The author outlines the Br. P. method as follows: "The process is one of double maceration with cold water, heating to boiling-point, straining, evaporation to sp. gr. 1.16 and when cold adding one sixth of its volume of spirits. The U. S. P. process is one of percolation with dilute alcohol containing 3 percent of water of ammonia." The author also compared fluid extracts manufactured by both methods with the following results:— "The U. S. P. extract had a very acrid bitter flavor, which quite overpowered the sweetness; the Br. P. extract on the other hand possessed a sweet mellow taste, free from acridity and with only a faint bitterness. If we bear in mind that the root contains besides the sweet principle an oleoresinous acrid substance and a bitter principle both more soluble in alcohol than in water, this is only what we might expect."

He prepared several aqueous extracts with varying proportions of ammonia and without ammonia. One fluid drachm of each extract was diluted with water to one ounce and compared as to appearance, flavor and volume of sweetness. The dilution from the ammonia extract had a much darker and richer color than that of the aqueous extract. In volume of sweetness, however, it was distinctly inferior, and its flavor thin and wanting in character. The use of ammonia in the menstruum is not only unnecessary, but objectionable, as it alters the character of the taste to the extract, while it does not increase the yield of sweetness.

He concludes that percolation of a course powder with water is the best method of extracting the liquorice and that ammonia should be added to the percolate in sufficient quantity to render the percolate slightly alkaline, thus preventing the deposit of glycyrrhizin which occurs in the acid aqueous percolate. He also recommends that the quantity of spirits added be slighty increased. [Pharm. Journ., 1898, p. 188.] *A. B. S.*

Physiology and Pharmacology.

Desichthol. — By distilling ichthyol (ammonium sulphichthyolate) with water-vapor, Helmers found in the distillate a volatile oil to which the odor seems to be due. The residue, to which the name desichthyol has been given, resembles ichthyol in appearance and physical properties, but is free from objectionable odors. The volatile oil amounts to only about ½ p. c., but since it is a chemically very active substance, it remains to be seen whether its removal does not affect the therapeutic properties of ichthyol.
[Ther. Beil. d. med. Wochschr., 1898, p. 11; Apoth. Ztg., 1898, p. 101.] *R. F.*

The Solubility of the Pentosans in the Reagents Employed in the Estimation of Starch. — W. H. Krug and H. W. Wiley have estimated the amount of pentosans dissolved in the various methods for the hydrolysis of starch and conclude that where it is desired to obtain the exact amount of starch, diastase must be used and the application of any acid avoided until those bodies which may be acted upon by it have been removed by filtration, or else a proper correction for pentosan-sugar must be applied.
[J. Am. Chem. So., 20, p. 266.] *W. A. P.*

Diastasimetry.—The author, D. L. Davoll, first discusses starch hydrolysis with a special reference to its application in the testing of amylolytic enzyms. All of the factors which have been the cause of so much variation in results receive attention and their influence is defined. Following the discussion are the analytical results obtained from an intimate study of the method of C. Junck and of methods based upon certain modifications of it. Analytical details are given in full. Many interesting deductions are made from the analytical data obtained by determining the reducing power o the products of hydrolysis in the various tests.
[Pharm. Archives, 1, p. 73.] *David L. Davoll.*

Comparison of the Standard Methods for the Estimation of Starch.—H. W. Wiley and W. H. Krug report the results of an extended series of estimations of starch by the various methods. From the conclusions, drawn from a vast amount of analytical data, we take the following: 1. All the heretofore described methods for the estimation of starch by polarization are liable to grave errors and none can be relied upon to give accurate results. 2. In the methods depending upon hydrolysis in an atmosphere of steam under pressure, caramelization is to be prevented by the employment of some organic acid, preferably salicylic acid. The formation of sugars produced by hydrolysis of pentosans increases the quantity of metallic copper obtained and thus raises the apparent percent of starch obtained. The pentosan sugars should therefore be determined and a suitable correction made. 3. The direct weighing of the starch, according to the method of Lindet, after the solution of protein by means of pepsin, gives fairly

good results and has many advantages for practical work. 4. The solution of starch by means of diastase, without pressure, gives satisfactory results when the diastase is freshly prepared and used in proper quantities and at an appropiate temperature. The diastase exerts only a small solvent action on the pentosans. (J. Am. Chem. Soc. 20, p. 253.] *W. A. P.*

Guaiacolate of Piperidine.—According to Rosenheim and Schidrowitz this compound $C_5H_{11}N[C_6H_4(OCH)_3(OH)]_2$ is best obtained by dissolving 2 molecules of the guaiacol in benzene, and one molecule of the piperidine in light petroleum. The white, crystalline mass is thoroughly washed with light petroleum, and then recrystallized from acetone or a mixture of benzene and light petroleum.

It forms splendid colorless prisms, melting at 79—80°, and fairly soluble in water, very easily in benzene, alcohol, ether, acetone, and ethyl acetate, but almost insoluble in light petroleum. The pure substance gradually assumes the odor of guaiacol on exposure to air.

When evaporated several times on a water bath with concentrated hydrochloric acid, it is totally decomposed, the whole of the guaciacol being volatilized and piperidine remaining as hydrochloride.

A physiological and therapeutical examination of the piperidine guaiacolate was made by Dr. Tunnicliffe, who states that this substance has already been introduced into medicine, and has been found to be of considerable service in phthisis. It forms a relatively soluble salt, and can be given either in solution or in the solid form. It has none of the irritant properties of guaiacol, and there is every reason to believe that the base, that is, the piperidine, not only neutralizes these irritant properties but exerts its own specific action, namely, that of a vascular and nervine tonic.

The importance of a vascular tonic in the treatment of the infective granulomata (tuberculosis) has recently been emphasized by Liebreich, who has found, both in the treatment of pulmonary tuberculosis and lupus, cantharidine to be of great service; the principal action of this substance is attributed by Liebreich almost entirely to its vascular tonic action. The combination, therefore, of a vascular tonic, one of the strongest known (perhaps the strongest with the exception of nicotine), and an antiseptic like guaiacol must be regarded pharmacologically as an advance, and the practical results obtained with this substance, although at present few, seem to prognosticate for it a distinct place amongst the remedies for consumption.

[Journ. of the Chem. Society, 73, pp. 141 and 145.] *H. F. Schwarz.*

Diastatic Fungi.—Jokichi Takamine calls attention to the properties of *Eurotium Oryzæ* Ahburg and tells how the diastatic ferment, Taka-Diastase, may be obtained. The spores of the fungus are sown on sterilized wheat bran and allowed to grow in an incubator at the proper temperature and

humidity. In 24 hours growth is visible and reaches its maturity in 6 to 7 days. The product is carefully dried and called Taka-Moyashi. This is mixed with wheat bran which has been moistened, steamed, and cooled down to 40° C. The product is spread in layers 1 to 7 inches in thickness in a room at a temperature of about 25° C. and humidity at above 80 percent. Growth of fungus continues and in about 40 to 50 hours the diastatic power is at its maximum. Further growth is checked by cooling the mass down. This may be preserved or is percolated with cold water and the aqueous extract utilized in those industries where diastase performs the function of converting starch into sugar. In order to obtain the Taka-Diastase nearly pure, the aqueous solution is mixed with 4 to 5 times its own weight of alcohol and the resultant precipitate contains the ferment, diastase, together with some other albumenoids. The precipitate is now separated from the mother liquor by decantation and centrifugal force; it is then pressed and air-dried and is now called Taka-Diastase. It is a yellowish-white, odorless powder, possessing a nutty taste. It is readily soluble in water but non-hygroscopic. It is stable in its diastatic power and is capable of converting in 10 minutes over 100 times its own weight of starch, according to the modified Junck's test. Its starch-liquifying properties are 3 to 4 times stronger than those of purified malt. [Am. Journ. Pharm., 70, p. 137.] *H. K.*

A New Kind of Artificial Immunization.—Dr. A. Wassermann has put forth some interesting conclusions concerning the toxic action of tetaims and has proposed a method for securing immunity from the same.

According to Ehrlich, if intoxication of an animal occurs, certain cells of the body must form a combination with the toxic principle, taking it therefore to itself from the circulation. In tetaims, the cells of the spinal cord act in this manner. Ehrlich calls that hypothetical part of the cell which combines with the toxine, the "toxophoric side chain," (*toxophore Seitenkette*), and believes that in course of immunization, a constant giving off of this substance takes place which in the circulatory system is freed and forms the antitoxic substance. If as a matter of fact, the tetaim's antitoxine according to Ehrlich's theory is nothing more than a definite quantity of the dissolved constituents of the cells of the spinal cord, so must, Wassermann concludes, protective substances already be formed in the normal spinal cord. It must, therefore, be possible by the injection of spinal cord substance from normal, unimmunized animals into the circulation of exposed animals to protect the latter from the tetaim's poison. The poison combines with these substances injected into the blood and is not in position to attach itself to the substance of the spinal cells of the exposed animal.

Experiments conducted by Wassermann and Takaki have confirmed this line of reasoning. The injection of an emulsion of brain or of spinal cord substance into intoxicated white mice were able to save the lives of these

animals. The nervous substance from the most various kinds of animals gave protection, but preparations of no other tissue were able to do the same. One ccm. of brain emulsion neutralized the twofold fatal dose, while spinal cord emulsion neutralized but the threefold fatal dose. The property here seen is not capable of extraction from the nerve tissues with water.

The extension of this principle to other diseases is a matter for experiment along the lines here suggested.

[Therapeut. Monatsh. 12, p. 97, from Institut für Infectionskrankh. zu Berlin.] *R. H. T.*

The Albumen-Iodide of the Thyroid Gland; its significance and transformations in the body.

1) The iodine compound of the thyroid gland.—Heretofore the opinion generally prevailed that iodothyrin was really the effective substance of the thyroid gland and that it existed in the gland partly as such but in greater part combined with albumen. The investigation of F. Blum on the other hand, show that iodothyrin is not contained in the gland in the free state, all of it being in the form of the albumen-iodide and furthermore that it could not be split off from the albumen by boiling with alcohol as is the case with lecithin, when that substance is yielded upon boiling with the residue left after digesting egg yelk or brain with ether in alcohol. All attempts to free the iodothyrin from the albumen have resulted in compounds belonging to the albumen since they shared with these the property of coagulating upon heating and eventual addition of salt (Thyrogen c) and also that of forming a non-coagulable compound with formaldehyde (Thyrogen f).*

The iodo-thyrin is therefore really only a decomposition product of the organic iodine compound as contained in the gland.

2) Origin of the albumen-iodide of the gland.—It is a known fact that the iodine content of the thyroid gland is considerably increased upon the administration of iodine preparations. Blum was able to demonstrate that the gland was not only able to pick up a portion of the circulating iodine preparations so introduced but also to convert them completely and rapidly into its own peculiar iodine compound. It is also of importance to note that the gland is able to hold on to its iodine supply with great tenacity, whereas all other organs after a short time deliver it over into the general circulation.

3) The fate of the albumen-iodide of the thyroid gland in the body.—Experiments have shown that extensive decomposition takes place in the body of nearly all of the albumen iodide given over to the circulation by the thyroid gland. Since the compound can withstand even the strongest

*) Apotheker-Ztg. 1897, p. 153.

reducing agents it is very improbable that reduction processes in the body can be instrumental in the breaking down of the compound when introduced per os with the production of hydriodic acid. In consideration therefore of the behavior of the thyroid albumen iodide of the iodothyrin outside of the body it is much more reasonable to suppose that the liberation of the iodine from these compounds is due to oxidation processes, which of course play an important rôle in the body vitality. As soon as liberated, the iodine immediately combines in the nascent state with some of the surrounding albumen (so far as it is not combined with alkali) with the production of hydriodic acid and some little albumen iodide. The latter sooner or later undergoes similar decomposition so that eventually no trace of the original organic compound remains in the body except in the gland. The alimentary canal and the thyroid gland have no hand in this halogen liberation process. Since traces of organically combined iodine may be found here and there (heart muscle, musculature, pancreas, etc.) after the administration of potassium iodide it would not be safe to say that albumen iodide is decomposed, if present, wherever oxidation processes occur, it being immaterial whether the compound be of synthetic or of organic origin.

4) The changes produced in iodine preparations when introduced into the body have for their ultimate end the liberation of iodine. Exactly the same fate awaits the iodine compound of the thyroid gland when once passed into the general circulation, the freed iodine being expelled by means of the kidneys. In the gland itself, however, the conditions are very different. It takes up a relatively very small amount of the total iodine, but after having remodeled it into its own peculiar albumen iodide it holds the iodine supply thus obtained for a long time. It is entirely possible that during this time more or less extensive iodine exchanges take place in the gland itself, the purpose of which may be sought for in the attempt to neutralize toxic substances by means of iodating them.

The question as to whether the retention of the iodine be the only specific function of the thyroid must therefore be answered in the negative when a comparison of the effect of synthetic and gland preparations is made with reference to their effect on the albumen exchange, for, while the former even in large doses calls forth only a small "Eiweiss Stoffwechsel" the opposite is true of the latter.

Since, so far as the fate of the iodine is concerned, the transformations of the gland albumen in the body but outside of the gland itself are exactly the same as those of the synthetically prepared albumen iodides the conclusion must be drawn that the increase of the albumen exchange after thyroid gland feeding is due to the specific albumen compound or other agent of the gland and not to the iodine.

5) Experiments have proven that by iodating the toxic principles taken up by the thyroid may be made perfectly harmless. These principles are

very detrimental to assimilation and can withstand many strong physical and chemical agents. The iodine which is liberated in the gland finds in the gland toxic albumens with which it reacts forming perfectly harmless compounds and it is in this process that we see the true function of the gland and its albumen iodide. Whether other similarly acting compounds are formed in the gland is as yet difficult to decide.

The activity of the gland may therefore be summed up as follows:—The gland takes up specific toxic substances arisen in the body and passed into the general circulation and forms alluminous bodies with these which do not leave the gland before they have been made perfectly harmless. One of the means of taking away the toxicity of these compounds is by iodating them. If a continual iodine liberation takes place in the gland it is possible that the iodine is the only active anti toxic principle of the gland, if not it would be an entirely legitimate assumption that still other processes are instrumental in rendering harmless the toxalbumens imprisoned in the gland.

[Apt.-Ztg. 13, p. 212.] *F. J. Gaenselen.*

Literary.

Books and Pamphlets Received.

American Pharmaceutical Association—Baltimore. Proceedings of the forty-fifth annual meeting, held at Lake Minetonka, Minn., August, 1897. Also the constitution, by-laws and roll of members. One vol., pp. xxvii, 849.

Felix Alcan, Éditeur—Paris. Dictionnaire de Physiologie par Charles Richet, Professeur de Physiologie à la faculté de médecine de Paris. Deuxième fascicule du tome iii, pp. 321—608, avec 87 gravures dans le texte.

Verlag von Gebrüder Borntraeger—Berlin. Zur Austilgung der Syphilis. Von Dr. med. Ernst Kromayer, Privatdocent an der Universität Halle a. S. Ein Bd., pp. vii, 105, mit 7 Curventafeln. 1898. M. 3.50.

Missouri Botanical Garden—St. Louis. Ninth Annual Report. One vol., pp. 160, with 45 plates. 1898.

Verlag von Leopold Voss—Hamburg. Praxis der Harnanalyse. Anleitung zur chemischen Untersuchung des Harns. Nebst einem Anhang Analyse des Mageninhalts. Von Prof. Dr. Lassar-Cohn. Zweite Auflage. Ein Bd., pp. 40. 1898. M. 1.

Field Columbian Museum—Chicago. Contribution III to the costal and plain flora of Yucatan, by Dr. Charles F. Millspaugh, Curator, Department of Botany. Botanical Series, Vol. I, No. 4. 1898.

E. R. Squibb & Sons—Brooklyn. An ephemeris of materia medica, pharmacy, therapeutics and collateral information. Vol. v, No. 1. 1898.

D. T. Werner—Avon, Pa. Ueber isomere Menthylamine und Menthene. Inaugural-Dissertation zur Erlangung der Doctorwürde der hohen phil. Fakultät d. Georg-Augusts-Universität zu Göttingen. Pamphlet, pp. 59.

Authors—Madison. Solutions of silicates of the alkalies, by Louis Kahlenberg and Azariah T. Lincoln. Pamphlet, pp. 14, Reprinted from the Journal of Physical Chemistry.

Author—New York. Solution of the proprietary question. By C. C. Fite. Pamphlet, pp. 8. Reprinted from the Phila. Med. Journ.

Agr. Expt. Station—Madison, Wis. A bacterial rot of cabbage and allied plants, by H. L. Russell. Bulletin No. 65. Pamphlet, pp. 39.

Reviews.

THE YEAR-BOOK OF TREATMENT FOR 1898. A Critical Review for Practitioners of Medicine and Surgery. One vol., pp. 488, Lea Brothers & Co., Philadelphia. 1898. Cloth, $1.50.

That this publication is doing acceptable service is shown by the fact that this is the fourteenth consecutive issue. It covers all branches of practical medicine, each branch being assigned to a recognized authority in that department. The typography of the book is good and it possesses an excellent index.

It is gratifying to note that a larger number of the contributors give at the end of their articles a list of "New Publications", than was the case last year.

This is as it should be; for the reader often is so situated that he does not have ready access to publishers lists or only to a few of the home lists, the foreign never coming into his posession.

The absence of this list is in some instances quite striking; for example, we read on the opening page "The year has been distinguished by the appearance of Dr. Lander Brunton's lectures on the action of medicines..... The book is not merely of great value in discussing the effects of drugs, but it is most suggestive in many hints on practical therapeutics." A few lines below we read "The year has also been marked by the appearance of Sir William Broadbent's work on the heart," but when we turn to the close of the article to find the titles and publisher we are disappointed. Many other such instances might be mentioned. Articles from current publications are in almost every instance properly accredited.

It is pleasing to note that American authors and ideas are as well and as frequently represented as those of other nationalities. This is especially true in regard to the excellent work of Drs. T. Mitchell Prudden and Hermann Biggs of New York City in "Preventative Medicine."

Altogether the book is one which recommends itself to the busy practitioner and to the man who has not access to files of foreign periodicals yet desires to keep up to date. *W. S. Miller.*

HANDBUCH DER DROGISTEN-PRAXIS. Ein Lehr- und Nachschlagebuch für Drogisten, Farbwaarenhändler, etc. Im Entwurf vom Drogisten-Verband preisgekrönte Arbeit von G. A. Buchheister. Mit einem Abriss der allgemeinen Chemie von Dr. Rob. Bahrmann. Fünfte Auflage. Ein Bd., pp. x, 891, mit 225 in den Text gedruckten Abbildungen. Verlag von Julius Springer, Berlin. 1898. M. 10.00.

As is generally known, pharmacy is practiced in Germany by two classes: the apothecary or scientifically educated pharmacist, and the druggist, who must have some technical training but does not necessarily possess a university education. Parts one and two of the second edition of the Schule der Pharmacie published by Julius Springer were recently reviewed in the columns of this journal. Attention was called by the writer to the eminently scientific character of the chemical part of this five volume treatise. This work is intended as an introduction into the study of the science and practice of pharmacy. The needs of the druggists have been met in a somewhat different manner as is indicated in the volume before us. The volume is divided into an introduction, four divisions and an appendix.

The introduction contains a chapter on the general arrangement of the drug store and a number of special practical hints. Other chapters take up the subjects of balances, weights and measures; descriptions and directions for use of various utensils employed; definitions and descriptions of processes; in other words the druggists' technique.

After a brief systematic and morphological introduction, part one takes up vegetable drugs much in the same manner in which they are treated in Maisch's Materia Medica. The number of illustrations, however, especially of "Lupenbilder" is larger. The arrangement is morphological. Gums; gum-resins; resins; oleo-resins; volatile oils; fats; concentrated liquid and solid extracts, such as extract of malt, catechu, aloes, etc.; sponges and animal drugs, such as cantharides, leeches, castor, musk, etc.; also crude mineral drugs, such as gypsum, pumice stone, asbestos, etc., are all included in this first part. It corresponds in many ways to some of our old-fashioned materia medicas.

The second part contains a forty-two page introduction to chemistry and then discusses in the monograph fashion the various inorganic and organic chemicals of interest to the druggist.

Part three discusses in a similar manner the various dye-stuffs, pigments, bronzes, the preparation of mixed paints, of dryers, varnishes, etc.

Part four takes up the operative phases of the drug-business, corresponding in many ways to operative or practical pharmacy, the laws regulating the drug business, the general regulations of commerce and of business.

The appendix contains a guide for study and a brief course for chemical analysis. The volume is provided with a detailed index.

E. K.

CHEMIE DER ORGANISCHEN FARBSTOFFE. Von Dr. Rudolf Nietzki, o. Professor an der Universität zu Basel. Dritte vermehrte Auflage. Ein Bd., pp. x, 344. Verlag von Julius Springer, Berlin. 1897.

In 1885, the author issued in the form of a separate the article on Farbstoffe, written for Ladenburg's Handwörterbuch der Chemie. The favorable reception which was accorded this reprint caused him in 1888 to expand the original monograph and to

supplement it in many directions. The product was in reality a new treatise, a short hand-book on the chemistry of organic dye-stuffs. A second edition appeared in 1894 and a third revised and augmented edition in 1897.

The modern dyestuff industry is very largely a product of structural chemistry. Although important individual discoveries were made before the sixties, discoveries which laid the foundation of this great industry, the great superstructure, with its host of brilliant dyestuffs that rival the colors of the rainbow and the tints produced in the western skies by the setting sun, developed with marvelous rapidity after Kekulé's structural theory had permeated all chemical thought.

It is not surprising therefore that attempts are being made to explain the process of dyeing itself on a structural chemical basis, and to classify dyestuffs in accordance with like principles.

They are grouped into the following twelve classes: 1. Nitro-compounds; 2. Diazocompounds; 3. Hydrazo- and pyrazolone dye-stuffs; 4. Oxyquinones and quinoximes; 5. Di- and triphenyl methane derivatives; 6. Quinoneimide dyestuffs; 7. Anilin black; 8. Quinoline and acridine dyestuffs; 9. Thiazol dyestuffs; 10. Oxyketones, xanthones and flavones; 11. Indigo and derivatives; 12. Dyestuffs of unknown constitution.

The author is careful to guard against the possible erroneous supposition that the constitution of all members of the first eleven classes is known. This is by no means the case, but inasmuch as they are mostly products of chemical synthesis, sufficient is known to classify them with related compounds. The last class includes principally representatives from the animal and vegetable kingdoms. The number of natural dyestuffs from both kingdoms is very large and only those could be taken into consideration in this treatise which are of technical or of special chemical interest. Natural dyestuffs have been prepared synthetically or the constitution of which is known, e. g. alizarin, are naturally grouped with the classes to which they structurally belong. This classification has been adopted by other writers and seems to meet with the approval of chemists generally. *E. K.*

Pharmaceutical Review.

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Editorial.

In his address at Montreal, the then Chairman of the Section on Education and Legislation pointed out that this section had accomplished little in positive results in the improvement of either pharmaceutical education or legislation in this country. No one need be surprised at this, because work of this character is slow in any country and must be particularly slow in a country in which not the central government but the various state legislatures have in large measure the ultimate control over the improvements sought. If it is further born in mind that the various state governments will not take the initiative in such matters and that the various state legislatures will be largely influenced by the status of public opinion and by the pressure brought upon them by their pharmaceutical constituents, the following remarks made at Minnetonka by Mr. Shepard ought to be better appreciated: "The idea of a model pharmacy law is one that will have to grow very slowly, and the only way to stimulate the growth is to continually spread abroad all the ideas of a general sort that can be evolved."

If in the light of these remarks, one looks at the work accomplished by the Section on Education and Legislation in recent years, we are struck by the desire to "rush" things considerably. Several years ago when the question of pharmaceutical education was uppermost, certain persons desired to dictate to the educational institutions of this country what they ought to do and what they must not do.

Since Professors Patch and Beal have shown up the peculiar status of our pharmacy laws, the desire of some of the same persons has been to force upon the Association the adoption of reports that were gotten up hastily and written at so late an hour that they could not even be submitted to the other members of the Committee to whom the whole matter had been referred. Although the Association has often displayed its genuinely American trait of long suffering and has at times even encouraged that which was decidedly unworthy of encouragement by a national organization, it is to be congratulated upon not having made itself an unworthy tool.

Some time ago a circular was distributed by the present Chairman of the Section of Education and Legislation. To review the history of this circular would necessitate the rehearsal of some occurrences and discussions that are by no means pleasant to some of the members of the American Association and are of such a nature that their record will not be found in our printed proceedings. The writer must confess that he has been somewhat amused at the way in which this circular was received by various pharmaceutical journals. Suffice it, at present at least, to state that the present Chairman issued this circular because he was ordered to do so by the Section.

If we look over the circular, we are inclined to the opinion that it had been better for the committee (?) to report "progress" rather than to make such a report. The report was to present a consensus of opinion of the various state pharmaceutical associations, boards of pharmacy and colleges and schools of pharmacy. Apparently it does not represent the opinions of as many individuals as there are states in the Union. According to the report, four organizations in Illinois were represented by one person each, yet these four individuals are accredited with four out of the total of twenty-six votes cast. In one instance, the writer has been informed, the queries were not presented to the members of a state board, but were evidently answered by the secretary without consultation with his colleagues. This very likely is true in other cases.

No doubt the principal reason for the lack of interest manifested is due to indifference. On the other hand it may be readily conceded that many thinking persons read the queries with a mixture of amusement and disappointment. The result certainly warranted such an attitude. The reporter introduces his remarks with the laconic

statement that "there is practical unanimity on all the minor details." On one of the most important questions submitted there seems to have been a tie. It is comparatively easy, though it may be a tedious job, to settle minor matters after fundamental questions have been disposed of. To mix up minor details with fundamental principles will not assist in arriving at a satisfactory conclusion. What we need is enlightenment on fundamental principles by persons who have made a study of the same, thorough-going reviews on both sides of one question at a time. It will be of value to distribute literature that presents the historic and modern economic aspect of a subject, but to ask the druggists of this country whether in the final examination pharmaceutical preparations are to be identified by reagents or not is to carry the principle of the query ad absurdum. It reminds one of the question asked of the druggists of the country by a chairman of the same section some years ago, viz.: what shall constitute a college curriculum, and yet we have been informed by a statistician of our association that nine-tenths of our druggists have never had a college education even of the poorest grade. Statistics of that kind are as valueless as some of our census reports compiled by men whose sole qualification is that as newspaper editors they have been of political service to the person who had the power of appointment.

We hope that the good work in the accumulation of reliable statistics and their classification begun by some may continue. We should endeavor to inoculate the pharmacists of this country with advanced ideas of pharmaceutical education and a general economic aspect of pharmaceutical legislation. We cannot expect a model pharmacy law to pass a single legislature within the next twenty-five years. Why then spend so much time on minor details which will demand constant alteration. Let us spend our energy on more fundamental matters, let us advocate sound principles which will stand the test of time and with the aid of which we can gradually rise to something higher and better. A model pharmacy law—the principles of one stripped of all cumbersome detail—formulated by our national association should be on a firm foundation yet flexible in its superstructure; not a law formulated for this period of transition, soon to be worthless, but something to which the better educated of our younger generation may be willing to devote a life of unflinching devotion.

Carbon Dioxide from Fermentation.

By Dr. *P. Fischer.*

The carbonic acid industry has, during the last decade, gone through an extraordinary development. The latest statistical reports show an annual production of about 24 million pounds of liquid carbon dioxide in Germany alone. In England as well as in the United States the consumption of carbonic acid has been constantly growing and is certainly of no lesser dimensions than in Germany. It can be said that, at the same time, the quality of the commercial liquid carbon dioxide has been constantly improved, and at present an article of the highest degree of purity can be placed on the market.

Until recently, the raw material for the manufacture of carbon dioxide consisted mainly of the carbonates of calcium and magnesium, which can be procured in the form of marble, magnesite and dolomite. The expulsion of the carbon dioxide from these bodies can easily be effected either by calcination at a sufficiently high temperature or by the action of sulphuric acid thereon. If the mineral used is composed of pure carbonates and, especially, is free from any organic admixtures, the resulting carbon dioxide will also be correspondingly pure. Very pure marble and magnesite, however, are rare — the latter being imported from Greece in excellent quality — and their prices are, therefore, rather high. The ordinary commercial marble-dust usually contains traces of bituminous substances, which, if acted upon by heat or acids, give rise to certain organic gases possessing a peculiar, disagreeable odor, and as the odoriferous substances can not well be entirely destroyed or absorbed by subsequent washing with suitable chemical solutions in special purifying vessels, the quality of the carbon dioxide will sometimes be perceptibly deteriorated owing to their presence. The same will be the case with water carbonated with such gas. Hence manfacturers of carbonated beverages occasionally complain about the "liquid gas" they buy and sometimes even have to return the same.

Although it must be admitted that liquid carbon dioxide of any desirable degree of purity can now be made by the old processes, if only carefully selected materials and approved methods of purification are employed, it is very natural that for a number of years various

persons in various countries have tried to utilize the carbonic acid gas, which is given off during the fermentation of beer and other liquids and which, until a few years ago, had been allowed to escape into the atmosphere. As it is a mere waste product, of course this gas requires no extra expenses for raw materials and generators, but only a plant for collecting, purifying and liquefying the same. Besides, if the fermentation of beer is conducted with proper care according to the principles of modern brewing science, the evolved gas does not contain any volatile admixtures of disagreeable taste or smell. On the contrary, such gas as is generated in the fermenting tubs has an agreeable ethereal smell on account of traces of ethyl esters and other harmless substances contained therein. These odoriferous gases, however, can easily be removed by washing.

Now, let us cast a glance at the quantity of carbonic dioxide, which is produced during fermentation. The unfermented beer-wort, on an average, contains about 8 p. c. of fermentable sugars in the form of maltose, isomaltose and inverted saccharose derived from the starch of the malted barley. The general equation for the alcoholic fermentation is: $C_6H_{12}O_6 = 2C_2H_6O + 2CO_2$

$$(180 = 92 + 88),$$

which though not quite correct can be accepted for our purpose. By the action of the zymase in the yeast cells, therefore, the sugar is split up into about equal parts by weight of alcohol and carbon dioxide. That is to say, 100 pounds of beer-wort will furnish about 4 pounds of carbon dioxide. Each barrel of fermenting beer-wort will consequently yield about 10 pounds of carbon dioxide, and the annual production of beer in the United States amounting to over 30 million barrels, more than 300,000,000 pounds of carbonic acid gas are thus produced, most of which still escapes into the atmosphere. Only a very small quantity of this is required for the carbonation of beer to give the same the desired life. It would obviously be impracticable and unprofitable for breweries of a small size to put up a plant for gas collection and liquefaction, but the larger breweries of this country could easily furnish 100,000,000 pounds annually, which is perhaps 3 or 4 times the quantity at present needed.

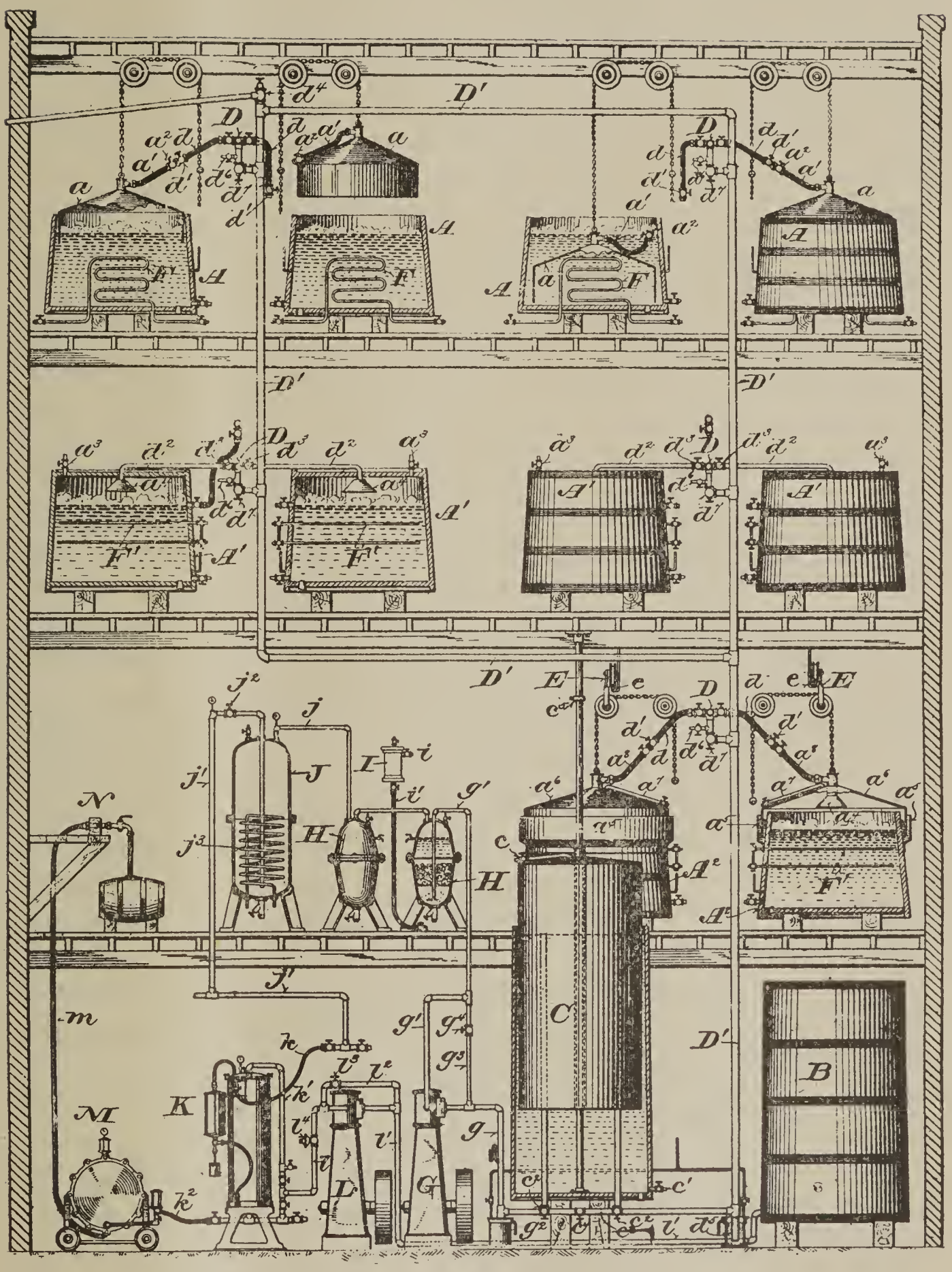
The Pabst Brewing Co. at Milwaukee was the first to introduce a system of carbonic acid gas collection on a large and practicable scale some time ago; in the past year more than 1,500,000 pounds of its gas were liquefied and sold and arrangements have been made

to turn out more than double this quantity in 1898. The annual capacity of the Pabst brewery being more than one million barrels of beer, this plant alone can furnish 10,000,000 pounds of liquid carbon dioxide year after year.

It is by no means a new idea to utilize the gases of fermentation. Quite a number of patents had before been granted in England, Germany and the United States with regard to special methods or apparatus intended for the purpose in view. The reason why their owners had no practical success, before this matter was taken up in Milwaukee, is very simple. If atmospheric air is mixed with the gases of fermentation, it is evidently exceedingly difficult to get rid of the air afterwards either in a chemical or a mechanical way. An English process known as the Tichbourne patent expressly provided for the elimination of oxygen by washing the mixture of fermenting gas and air with a solution of ferrous sulphate, but it totally disregarded the presence of nitrogen in air. Two American patents based the separation of the gases on the difference in their respective specific gravities; they simply neglect the well-known laws of diffusion by anticipating that the carbonic acid gas as the heavier of the two would readily settle at the bottom of a reservoir containing the mixture of the gases and could be pumped therefrom in a pure state.

It is no doubt a hard problem to effect a complete separation of air and carbonic acid gas. The latter should however, for many purposes at least, be absolutely air-free. For instance for carbonating beer, air-free gas is indispensable. It may be stated here that also for carbonating water air-free gas is to be preferred, for such water when poured in a glass retains the gas and therefore keeps its refreshing taste much longer than is the case otherwise. If the carbonic acid gas contains air, some of it is dissolved at the high pressure used for carbonating the water, and when this pressure is released by opening a bottle filled with such water, the dissolved air will immediately be freed, rush to the surface of the water and cause sufficient friction and agitation to expel also much of the dissolved carbon dioxide.

The best way to solve the above mentioned problem is to get around it by avoiding a mixture of fermenting gas and air from the start, that is by collecting air-free gas directly from the fermenting tubs. This can best be done by employing closed tubs exclusively instead of the open ones now generally in use. But brewers, especially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those of Europe, are very conservative people. For centuries they used to ferment the hopped malt extract in their traditional open vats. Formerly the brewer was a man of practical experience only, to-day he must also be a man of scientific knowledge. In former days he permanently had to observe the fermentation in his open tubs, now-a-days he can safely close them on top and, nevertheless, be absolutely sure that fermentation will go its usual way. As a matter of course, beer is the main product in breweries and carbonic acid only an unimportant by-product as compared with the beer; it is therefore strictly indispensable that any process for collecting gas from fermentation must not interfere in any way with the regular working methods, but is to be adapted to their requirements.

In the following is given a short description of the system of gas collection now in use in a number of breweries and first introduced at the Pabst Brewing Co. Referring to the accompanying patent drawing, which shows partly in vertical section, partly in elevation a plant constructed for the purpose in question, A, A^1 and A^2 designate fermenting tubs which are equally fit for the collection of the carbonic acid gas. The tubs A and A^2, which are open on top, are provided with movable hoods or bells, which can be lowered or raised at will. The bell a can be entirely submerged in the fermenting liquid, and as it is provided with an air-vent at its highest point the air previously contained in the bell can be completely expelled therefrom. After closing the valve a^2, the evolving gas will soon raise the bell and accumulate in the hermetically closed fermenting space thus created. The hose section a^1 attached to the apex of the bell can then be connected with hose section d leading to the gas main D and collection of the fermenting gas commenced.

This is undoubtedly the simplest way to secure an air-free carbonic acid gas from the very beginning of collection, but it is not the most practicable. For several reasons the tubs designated A^1 are the best with respect to practical work. They are provided with stationary flat tops and air-vents a^3 at their uppermost points. During the initial stages of fermentation these vent-valves a^3 are left open, and when it is desired to collect the gas from the tubs A^1, the valves d^3 in pipes d^2 are opened and air-free gas is admitted from the main into the gas-collecting spaces of the tubs. All traces of air are thus expelled, with more or less gas, from the gas-collecting spaces through the vents a^3. As soon as pure, that is air-free, gas

issues from the vents—which can easily be stated within two or three minutes by examination of a gas sample with Winkler's burette—they are closed, and then the gas produced by fermentation accumulates therein, until its pressure exceeds that in the collecting main, whereupon it will flow free from air into said main as long as active fermentation continues (about 8 days) and the connection between the main and the fermenting tubs is maintained. It is evidently not necessary to expel the air from the fermenting spaces with pure gas taken from the main; the gas produced by the fermenting liquid will soon displace the air and remove the same entirely through the open vent-valves, which can be connected with a system of waste pipes to prevent the carbonic acid gas from escaping into the fermenting rooms. This pipe system, however, is not shown in the drawing.

A very low pressure of only a few ounces to the square-inch is maintained in the system of gas collecting pipes so as not to interfere with fermentation and impede the separation of gas from the liquid. As soon as the supply of gas from the fermenting beer is sufficient to overbalance the slight pressure in the gas collecting system, it will pass from the fermenting space in which it accumulates, free from air, into the main and thence through its connections into the gas-receiver *C*. If gas is collected from the fermenting tubs faster than it is used or drawn away from the receiver, it will extend the same and accumulate therein. When the gas-holder is filled and its bell engages with the stop a^5, or from any cause the gas-pressure rises above the desired limit, it will open the safety-valve d^4, or in case that fails to operate, the surplus gas will be removed through the traps d^5 and g^2, thus avoiding objectionable back-pressure in the fermenting tubs.

The described arrangement of air-vents and valves in the gas conduits enables the brewer to collect air-free carbonic acid gas from the tubs; and the whole gas collecting system, all mains, receiver, pump, etc. being once filled with pure gas after starting the plant, a continuous supply of air-free gas will afterwards be furnished at the delivery end of the system, as long as the brewery is in operation.

The accompanying drawing does not show a plant of purifiers and compressors such as is required for liquefying the gas. Such a plant can be arranged like those heretofore employed for manufacturing liquid carbon dioxide from marble and sulphuric acid. The two lower stories of the drawing show a plant for carbonating storage-beer,

for which purpose the gas need not be liquefied. A compression pump *G* draws the gas from the reservoir *C* and forces it at a pressure of about 40 pounds through a series of lead-lined washing vessels *H* containing a concentrated solution of potassium permanganate. The volatile odorous substances mixed with the carbon dioxide are hereby retained and destroyed, although this would not be absolutely necessary, as these substances are by no means foreign to the beer. The gases of fermentation also contain traces of alcohol, which is oxidized and completely decomposed, water and carbon dioxide being formed. The washers are exchangeable and can be emptied and refilled without admitting any air or interrupting the regular operation of the plant.

Another pump *L* draws beer from a storage-tub *B* and conveys the same to a carbonator *K*, where it is impregnated with carbon dioxide coming from the washers at a reduced pressure. The carbonated beer passes under pressure through a filter *M* and is then directly filled into shipping packages by means of a racker *N*.

This same method could be employed for carbonating water on a large scale, but in this case the gas would have to undergo a more thorough process of purification. This is a matter of great importance; for if there is the faintest peculiarity of flavor other than that of pure carbon dioxide, the carbonated water might be unfit for use. The gas is therefore first led through washing vessels containing water, which is frequently changed, subsequently passes lead-lined washers filled with sulphuric acid and finally a solution of potassium permanganate and sodium carbonate. If the gas is to be liquefied suitable desiccators must be added to the system. The gas thus obtained is entirely free from any foreign odor and is to be considered as chemically pure carbon dioxide.

The most extensive use to which carbon dioxide is put in this country is the manufacture of carbonated waters and other beverages. As the market price for liquid carbon dioxide has already considerably declined, there are prospects that it will gradually find application for many other purposes, for instance mechanical refrigeration and various chemical industries. Pure carbon dioxide can now be produced in almost unlimited quantities, and it is not impossible that the chemical industry of America, which is still in its infancy, might thereby acquire a favorable impulse for further development.

Benzinum U. S. P.

By *Edward Kremers.*

[Report of Com. *G*, U. S. P. Revision.]

Several years ago the writer had occasion to compare several statements given under the above title in the U. S. Pharmacopœia of 1890 with the facts that might be deduced theoretically from data found in works on organic chemistry. The comparison immediately revealed discrepancies, which were more recently verified by actual experiment.

The Pharmacopœia defines benzinum or petroleum ether as "a purified distillate from American petroleum, consisting of hydrocarbons, chiefly of the marsh-gas series (C_5H_{12}.C_6H_{14}), and homologous compounds." The fourth paragraph reads: "Specific gravity: 0.670 to 0.675 at 15° C. (59° F.);" the fifth: "Boiling point: 50°—60° C. (122° to 140° F.)."

How a person is to distinguish between a petroleum ether obtained from American petroleum and another obtained from a petroleum of a different nationality does not become evident. In what sense the term homologous is used, it is also difficult to understand, unless the definition is to read as follows: "Consisting chiefly of the paraffin hydrocarbons* of the pentane (C_5H_{12}) and hexane (C_6H_{14}) groups and their homologues."

As far as the writer is aware, petroleum ether is obtained exclusively by fractional distillation. What the Pharmacopœia evidently wants is that fraction of American petroleum which passes over between 50—60° in the process of purification by distillation.

Inasmuch as the hydrocarbons constituting American petroleum are supposed to consist principally of the normal members of the respective groups, for the sake of simplicity, normal pentane and hexane only need to be considered in this connection. Normal pentane boils at 37° and has a sp. gr. of 0.627. Normal hexane boils at 69° and has a sp. gr. of 0.658. Their isomers have correspondingly lower boiling points, but higher specific gravities, the highest one recorded being 0.677.

* Marsh-gas series.

From these data the improbability becomes apparent that a mixture distilling between 50°—60°, whatever the proportion of pentane and hexane may be, should have a sp. gr. as high as the lower limit required by the U. S. Pharmacopœia. As already stated, actual experience has verified this supposition.

A commercial sample of petroleum ether, which had evidently been imported by the chemical dealer from whom it was purchased, was fractionated carefully with a two-bulb column. From about three-fourths of a liter about two-thirds came over below 50° and most of the remaining third between 50° and 60°. The sp. gr. of this fraction, when determined with a Mohr-Westphal balance, was found to be 0.658 at 20°.

In a second experiment about 418 grams out of 440 grams came over below 50° and only about 15 grams between 50° and 60°. The sp. gr. of this fraction was found to be 0.657.

When petroleum ether was called for in a number of drug stores, higher boiling commercial articles, as a rule gasolin, were obtained. Yet upon fractionation a fraction between 50° and 60° was obtained which with one exception had a lower sp. gr. than that required by the Pharmacopœia, though as a rule the bulk of the article could not even be distilled from a water-bath. In that one instance the distillation had been conducted very slowly.

The fact that an error of this kind, insignificant as it may be regarded, could escape attention during the ten years when the sixth edition was in force and during another half decade since the seventh edition is in use, is in itself significant. The error in the sixth edition evidently was copied without question or experiment into the seventh. Neither do our American commentaries call attention to the mistake, although one of them gives the sp. gr. of pentane and hexane.

The Swiss Pharmacopœia† has adopted the same fraction, viz. 50—60° of American petroleum under the name of *Aether Petrolei.* The sp. gr. given is lower, viz. 0.660 to 0.670 and, therefore, allows of a range again as wide as that of the U. S. P. Both the lowering of the sp. gr. and the wider range are an improvement over the U. S. P. requirements. The only objection that might be raised against the minimum figure is that it is not low enough.

The test for benzene has been the same for two revisions and no one seems to have found fault with it. When tried with petroleum

† Duennenberger: Commentar zur Pharmacopœa helvetica, p. 34.

ether to which 20, 40, 60 and 80 p. c. respectively of benzene had been added, no odor of nitro-benzene was obtained, but in all cases crystals of odorless dinitro-benzene were formed. The directions for this test given in the German and Swiss pharmacopœias differ from the U. S. P. test principally in the much smaller amount of sulphuric acid to be used.

Attention was called above to the significance of the fact that these errors should have escaped attention for fifteen years. If to this is added the experience of the writer who during more than seven years of laboratory instruction has not been able to obtain a single specimen of petroleum ether from the drug stores and has had difficulty in finding something that approximated it by ordering it from dealers in chemicals, it would seem to indicate that the paragraph on petroleum ether in the Pharmacopœia is dead and buried. Should this article be retained, nevertheless, in the next edition of the U. S. P., the necessary corrections ought to be made, based upon more experimental evidence than is at hand at present.

Early Phases in the Development of Pharmaceutical Legislation in Wisconsin.*

By *Edward Kremers.*

As already previously observed, the printed proceedings of the Common Council throw little light whatever on causes, they simply record the effect, as it were. It is true they in the first instance mention the petition of the druggists of Milwaukee and also that objection had been raised by the druggists against the law drafted by the City Attorney. But they do not go behind these secondary causes. In one instance, the report of the Committee on Legislation is laid over, because objections have been raised, but the nature of the objections is not mentioned; in another, the report is amended, but the character of the amendment is not recorded.

In order to obtain information with regard to these causes, the newspapers of that period have been found very serviceable. They not only, in several instances at least, contain a record of the dis-

* Continued from p. 188.

cussion which took place in the Common Council, but they also contain communications and editorials which throw considerable light on the subject in general and on certain phases in particular. It remains, therefore, to record the additional information from this source pertaining to the final stages of the so-called druggists' act.

The Sunday afternoon meeting, to which attention was called in *Document 32*, is reported in detail by the several newspapers. [*Document 34.*] It is of interest to learn that an educational qualification of apprentices was desired by at least one member present and that the majority considered such a measure inexpedient; that the superintendence of the drug stores by a member of the medical profession was evidently considered an insult by the best educated pharmacists present; that the attempt to make the wholesale druggist and not the pharmaceutical practitioner responsible for poor and adulterated drugs was objected to by a number of druggists; but also that the final law places a penalty only on the dispensing of drugs "knowingly" or "intentionally" adulterated; and finally that the registration of poisons (as the writer was informed by Mr. Thiele) was voted down.

The reception which the bill drafted by the druggists met at the hands of the aldermen does not become so apparent from the Proceedings of the Common Council [*Document 35*] as from the newspaper reports of the meeting. [*Document 36.*] After an unimportant discussion the bill was referred to the Committee on Legislation. At the next meeting it was reported back with an amendment. [*Document 37.*] The nature of the amendment as mentioned in the newspaper reports was to require an apprenticeship of three and not of four years as recommended by the druggists. [*Document 38.*]

The amended bill having been approved by the Common Council on February 7, it was transmitted on the 8th with several other bills by the City Attorney to Mr. Henry Fink, Chairman of the Milwaukee delegation at Madison. Being a local measure, it would seem that the bill encountered no difficulties at Madison. However, no investigation of its course in the legislature was made. Suffice it to state that it passed both houses and was approved on the tenth day of March.

The above record of the first pharmacy act in Wisconsin is not absolutely complete. If rewritten, it could readily be improved upon, for in the course of the past nine months while writing the monthly or bimonthly installments of this series, information came to hand

which would have necessitated changes in several of the articles. The object in presenting this fragment of Wisconsin's pharmaceutical history was to assist in rousing, if possible, an interest in the study of our local history. The druggists in every state and territory of this Union ought to take a greater interest in the historic development of pharmacy of their section. The history of pharmacy in any state will not be written in a year, but contributions, however small, should be made annually. It may be argued that such contributions smack too much of local flavor. Such an argument, however, can readily be met by the safe assertion that the history of pharmacy of the United States can never be written until we have a better understanding of the development of pharmacy in each section.

Document 34.

[*Germania*, 24. Jan. 1876; p. 3, col. 2.]

Die neue Apotheker-Verordnung.

Gemäss Uebereinkommen versammelten sich gestern Nachmittag gegen 25 Apotheker in dem Lokale des Pharmazeuten Otto Thiele an Dritter Strasse, um an Stelle der jetzt dem Stadtrath vorliegenden Apotheker-Verordnung eine neue zu entwerfen und zu berathen.

Nach einiger Berathung einigte man sich über eine neue Vorlage, die dem Stadtrath heute Nachmittag zur Annahme empfohlen werden soll. Die Hauptpunkte derselben sind folgende:

Da die öffentliche Sicherheit durch den ungeregelten Verkauf von Gift, ob für rechtmässige Zwecke oder als Medizin nach Vorschrift des Arztes gebraucht, gefährdet ist;

Da ferner der Erfolg des Arztes bei der Bekämpfung von Krankheiten hauptsächlich von der Anwendung guter und unverfälschter Droguen und wissenschaftlich zusammengesetzter Arzneien abhängt, und da Personen, denen der Verkauf von Droguen, Arzneien und Giften anvertraut wird, nämlich Apotheker, Chemisten oder Pharmazeuten, eine vollständige Kenntniss der Arzneikunde besitzen sollten, deshalb wird vorgeschlagen:

1. Jeder Apotheker und Apotheker-Gehilfe soll registrirt werden.

2. Die Anfertigung von Recepten und Arzneimitteln durch die Gehilfen soll unter Aufsicht der Principale geschehen.

3. Sechs Apotheker sollen dem Mayor vorgeschlagen werden und dieser soll aus denselben drei auswählen, als Comite für Prüfung von Apothekern.

Der Secretär dieses Comites hat die Registrirung sämmtlicher Apotheker zu besorgen. Jedes Jahr scheidet eins der drei Mitglieder aus dem Comite aus und wird durch ein neues ersetzt, welches der Mayor ernennen soll.

4. Irgend eine Person, die 30 Tage nach Organisirung dieses Comites,

ohne registrirt zu sein, eine Apotheke betreibt, soll nicht weniger als $50 und nicht mehr als $200 Strafe zahlen.

5. Apotheker, welche wissentlich Arznei verfälschen, zahlen eine Strafe von $50 bis $500.

6. Die von Apothekern gehaltenen Gifte sollen in zwei Klassen getheilt werden. Der Verkauf der ersten Klasse soll nur gegen einen Giftschein des Käufers geschehen. Bei der Verabfolgung der zweiten Klasse soll der Käufer auf die Natur des Giftes aufmerksam gemacht werden und soll überdies das Gift als solches markirt sein.

7. Aerzte bleiben von diesen Bestimmungen ausgeschlossen, jedoch dürfen dieselben keine Apotheke halten, ohne als Apotheker registrirt zu sein.

8. Grosshändler mit Medikamenten werden von den Bestimmungen nicht berührt.

[*Herold*, Januar 24. 1876, p. 3, col. 6.]

Apotheker-Vereine.

Bereits in unserer gestrigen Nummer haben wir in einem längeren Artikel darauf hingewiesen, dass in den Augen praktischer und gewissenhafter Apotheker die vom Stadtanwalt ausgearbeitete Vorlage zu einem die Geschäftsführung der Pharmaceuten controllirenden Gesetze zu mangelhaft und unzureichend sei, um den damit angestrebten Zweck zu erreichen.

In Folge dessen versammelten sich denn auch im Hause des Herrn Otto A. Thiele gestern Nachmittag die Apotheker der Stadt, um ein von Herrn Th'ele ausgearbeitetes diesbezügliches Gesetz einer Debatte zu unterziehen.

Herr Lotz rief die Versammlung zur Ordnung und verlas dann das obenerwähnte Gesetz. Dessen erster Paragraph ging dahin, dass Niemand anders als ein registrirter Pharmaceut berechtigt sei, Gift und andere Medicamente zu verkaufen. § 2 bestätigt die in § 1 ausgesprochene Meinung. § 3, welcher die Befähigung als Pharmaceuten zu fungiren betrifft, besagt, dass ein solcher entweder 4 Jahre in einer Apotheke die Receptur gelernt oder in einer der inländischen oder ausländischen Universitäten sein Examen absolvirt haben muss. Recepturgehülfen dürfen nicht unter 18 Jahre alt sein und müssen auch im Uebrigen den oben angeführten Bestimmungen unterliegen, d. h. entweder registrirt oder examinirt sein.

Bezüglich der Bestimmung No. 4, welche besagt, dass die Apotheker der Stadt aus ihrer Mitte 6 Männer wählen sollen und dem Mayor der Stadt die Pflicht obliegt, aus jenen 6 Männern drei zu ernennen, welche ein sogenanntes Board of Pharmacy bilden sollen. Einer der Herren bemerkte, es wäre das Gegebene, einen Arzt zuzuziehen, stiess aber auf einen energischen Widerstand und zwar seitens der tüchtigsten und kenntnissreichsten Apotheker der Stadt. Doch blieb momentan die Debatte offen, d. h. ohne dass die Herren darüber abgestimmt hatten, fuhr der Präsident in der Vorlesung der weiteren Absätze des Gesetzes fort.

Die folgenden Bestimmungen § 5 specifiziren die einzelnen Pflichten dieses Board und schreiben vor, dass jedes Mitglied des Boards, wenn ein Candidat sein Examen mache, wofür derselbe 5 Dollars zu bezahlen habe, einen Dollar bekomme, der Rest aber in die Stadtkasse fliessen solle. Ferner waren in diesem Paragraphen noch Bestimmungen bezüglich des Wiedereinschreibens enthalten. — Der nächste Absatz betraf die Pflichten des Schatzmeisters und des Sekretärs. Weitere Bestimmungen gingen dahin, dass wer den Bestimmungen dieses Gesetzes zuwiderhandelnd ohne registrirt zu sein einen Drugstore offen halte, einer Strafe von nicht weniger als $50 und nicht mehr als $200 unterliegen solle.

Ferner hat dieses Gesetz auf Engros-Materialgeschäfte keinen Bezug, ebenso nicht auf sogenannte Patentmedizinen. Den Schluss des Gesetzes bildete eine Vorschrift für Apotheker bezüglich des Verkaufs von Giften, welche in jenem Documente ausgeführt sind.

Nachdem der Präsident das Document verlesen, ging die Versammlung zur Discussion über die einzelnen Paragraphen über und bemerkte § 3 ein Herr, ob es nicht besser wäre, wenn man von dem Knaben, welcher das Apothekergeschäft zu erlernen wünscht, eine Prüfung bezüglich seiner Kenntnisse verlangen wolle. Die anderen Herren schienen jedoch diesem Vorschlag sehr abgeneigt und gaben der Ansicht Raum, dass dies am Ende in Deutschland, nicht aber in Amerika durchzuführen sei. Der Absatz wurde schliesslich angenommen.

§ 4 wurde dahin abgeändert, dass das Board so construirt werden soll, dass eines der Mitglieder für 1 Jahr, eines für 2 Jahre und eines für 3 Jahre ernannt werden solle, und sodann angenommen.

Bei § 5 bemerkte Herr Tesch, es müsse auch eine Bestimmung da sein, welche über die Verwendung des Geldes etwas besage. Nach einer längeren Debatte beantragte Herr Widule, dass die anwesenden Apotheker einen Pharmaceutenverein gründen sollen, welcher das Recht habe, über das so eingekommene Geld nach Gutdünken zu disponiren. Der Antrag des Herrn Widule wurde angenommen und war somit diese Angelegenheit erledigt. Der die Pflichten des Schatzmeisters betreffende Absatz, in welchem wiederum gesagt war, dass der Mehrbetrag der Einnahmen in die Stadtkasse fliessen solle, wurde von Herrn Tesch im Sinne von der zu § 5 gemachten Zusätze amendirt. —

Der nächste Paragraph, die Strafbestimmungen gegen Solche, welche, ohne registrirte Pharmaceuten zu sein, Medicin und Gift verkaufen, betreffend, wurde angenommen; ebenso derjenige, welcher alle Apotheker, die verfälschte oder verdorbene Medicin verkaufen, mit Strafe bedroht. Hier jedoch erhob sich eine kleine Debatte, denn einige der Herren meinten, zuerst solle man die Engros-Händler verantwortlich machen; allein sie erhielten sofort zur Antwort, der Apotheker sei dem Publikum verantwortlich, und solle dem so-

genannten Wholesale-Druggisten die schlechte Waare zurückschicken. Die Herren machten jedoch in der Definirung dieses Paragraphen den Unterschied, dass nur Derjenige, welcher zu medicinischen Zwecken solch schlechte Waare verkauft, diesen Strafbestimmungen unterliegt, der sogenannte Handverkauf aber ausgeschlossen sein soll, und wurde ein von Herrn Tesch beantragter diesbezüglicher Zusatz angenommen.

Der den Giftverkauf regulirende Abschnitt wurde angenommen, ebenso derjenige, welcher "Wholesale Dealers", Aerzte und Patentmedicinen von diesen Bestimmungen ausschliesst. Nach diesem Abschnitt wird den Engros-Druggisten der Detailverkauf von Medicamenten untersagt, was ebenfalls ein Punkt von Wichtigkeit ist, denn vorher florirte noch in den s. g. Engrosgeschäften der Kleinverkauf. Bezüglich der registrirenden Gifte erhob sich eine kleine Debatte, welche aber schliesslich im Frieden auslief und mit einigen kleinen Aenderungen der betreffenden Gesetzesvorlage endete. Auch der letzte Abschnitt wurde angenommen.

Die anwesenden Herren beschlossen nun, eine Petition um Befürwortung dieser Bill durch den Board of Aldermen zu unterschreiben und dieselbe dem Common Council einzusenden.

[*Sentinel*, Jan. 24, 1876, p. 8, col. 1.]

The Druggists of Milwaukee Ask for More Stringent Regulations.

Pursuant to invitation about twenty-three retail druggists met at Otto Thiele's Pharmacy, on Third Street, to consider the amendment of the charter relative to more thorough regulation of their business. After considerable discussion an entirely original amendment was drafted so as to embody the following points:

1. That every druggist and his assistant shall be registered.

2. That druggists shall superintend all prescriptions compounded by their assistants.

3. That six competent druggists shall be recommended to the Mayor for choice and appointment of three of the number to act as a Board of Examiners, one of the Board so chosen to serve as registrar.

4. That the term of one of the Board shall expire annually, and the vacancy shall be filled by appointment by the Mayor.

5. That any druggist or assistant who shall fail to pass an examination, or who shall conduct business without registry, shall be fined in a sum not to exceed $50.

6. Druggists or their assistants convicted of adulteration or counterfeiting drugs and medicines shall be liable to fine of not less than $50 or more than $500.

7. To divide poisons into two classes, the first class not to be furnished, unless on approval order or certificate, and the second to contain a label of such form that the purchaser may be warned of the dangerous nature of the drug.

8. That the amendment shall not apply to wholesale druggists, and that physicians shall be exempt, provided they do not conduct an apothecary shop in connection with their calling.

The amendment was concurred in and handed over to a committee for presentation to the Common Council for incorporation with other amendments now pending before that body.

Document 35.

Regular Meeting Jan. 27. 1876, p. 246.

"Ald. Chase, from the Committee on Legislation, reported back the amendments to the city charter, recommitted at the last meeting": ———

"The committee reported on the amendments in relation to the appointment of a board for the examination of the druggists etc., by the following bill prepared by a committee of the principal druggists in the city:

"A bill to regulate the practice of pharmacy and the sale of poisons—— Sects. 1—12 incl.—and all acts and parts of acts contravening the provisions of this act are hereby repealed." (p. 248)."

"On the motion of Ald. West it was *referred to the Committee on Legislation.*"

Ald. Kittredge moved that it be printed with the proceedings of the *Board.*"

"Which was concurred in."

Document 36.

[*Germania*, 25. Jan. 1876; p. 3, col. 3.]

Sitzung des Board of Aldermen.

* * *

Die neue Apotheker-Verordnung wurde zunächst überreicht, an das Comite für Gesetzgebung verwiesen und mit den Verhandlungen zum Druck beordert.

Ald. Kraus machte das Comite darauf aufmerksam, dass das Gesetz nichts über den Verkauf von Gift an Kinder enthalte.

Ald. Bentley wünschte, dass der Verkauf von vergiftetem Whisky in der Bill eingeschalten und verboten werden sollte.

[*Herold*, 25. Januar 1876, p. 3, col. 4.]

Stadtverwaltung.

* * *

Bericht des Comites für Gesetzgebung.

* * *

Nun kam die in unserer gestrigen Nummer schon eingehend besprochene Apothekerbill auf. Den Inhalt derselben kennen unsere Leser bereits und die von dem Stadtanwalt daran vorgenommenen Veränderungen verändern den Sinn derselben nicht im Mindesten.

Alderman Kraus beantragte, dieses Gesetz zurückzulegen und Alderman Wolf beantragte, die Bill diesen Apothekern zurückzugeben.

Alderman Kittridge meinte, die Bill sei sehr gut und verdiene eine gründliche Erwägung durch den Common Council; ebenso war Alderman West der Ansicht, dass der Board of Aldermen wohl etwas mit zu thun habe. Nach längerer Debatte wurde beschlossen, das Gesetz bis zur nächsten Sitzung mit den Verhandlungen drucken und überliegen zu lassen.

Bezüglich des die verschiedenen Verbesserungen regulirenden Gesetzes erhob sich eine lange Debatte, welche schliesslich dahin endigte, dass das Gesetz angenommen wurde.

[*Sentinel*, Jan. 25, 1876, p. 2, col. 2.]

Common Council.

* * *

Regulation of Druggists.

The amendment drawn up at a meeting of the retail druggists of the city, at Otto Thiele's on Sunday afternoon, the points of which were presented to the readers of the Sentinel on yesterday morning, was next introduced and considered.

Mr. Wolf inquired whether wines and liquors were included in the schedule of poisons.

Mr. Johnston showed that one of the clauses enabled a homeopathic physician to retail drugs, since it exempts that class of the profession from the restrictions of the bill.

The Attorney declared that it related to physicians practising homeopathy.

Mr. Johnston declared that the section exempted this class of physicians from the provisions of the law.

Mr. Wallber remarked that the bill was drawn as the druggists desired it should be.

Mr. Michael Kraus moved that the bill be laid over for one week.

Mssrs. Chase and Kittridge spoke of the evils that the measures designed to correct.

Mr. West thought the measure an important one and recommended reference to the Committee on Legislation.

Mr. Kraus remarked that the bill contained no provision regulating the administration of dangerous doses to infants.

Mr. Bentley suggested that there had been no reference to regulation of the sale of poisoned whiskey.

The motion to refer was concurred in.

Document 37.

Regular Meeting, Feb. 7. 1876, p. 255.

"Ald. Chase, from the Committee on Legislation, reported back with amendments a bill to regulate the practice of pharmacy and the sale of poisons, and to prevent the adulteration of drugs and medicinal preparations in the city of Milwaukee, and recommended that it be adopted when amended."

"The amendments were agreed to, and the bill as amended was adopted."

Document 38.

[*Germania*, 8. Feb. 1876; p. 3, col. 5.]

Sitzung des Board of Aldermen.

Die Apotheker-Verordnung wurde von dem Comite mit der Aenderung zur Annahme empfohlen, dass da wo vier Jahre steht, drei Jahre gesetzt werden soll. Das Amendment und die Verordnung wurden angenommen.

[*Herold*, 8. Februar 1876, p. 3, col. 4.]

Stadtverwaltung.

Bericht des Comites für Gesetzgebung.

Ferner berichtete das Comite zu Gunsten der früher schon publizirten Apothekerbill und wurde diese mit dem Amendement, anstatt 4 Jahren praktischer Lehrzeit 3 Jahre zu inseriren, von dem Board approbirt und angenommen.

[*Sentinel*, Feb. 8, 1876, p. 2, col. 2.]

Common Council.

More Legislation.

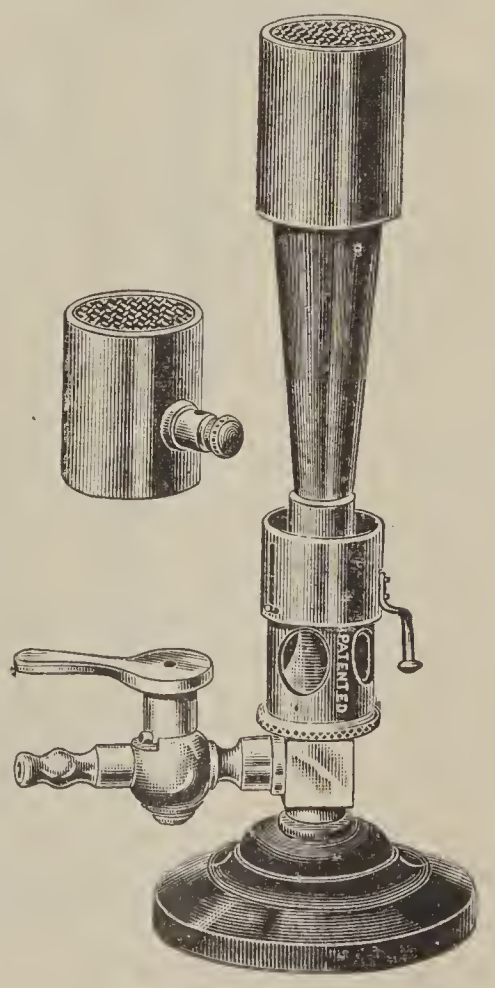
The Committee on Legislation, by the City-Attorney, reported additional legislation as follows: * * *

The Committee also returned the pharmacy regulation bill with an unimportant amendment. Concurred in.

MONTHLY REVIEW.

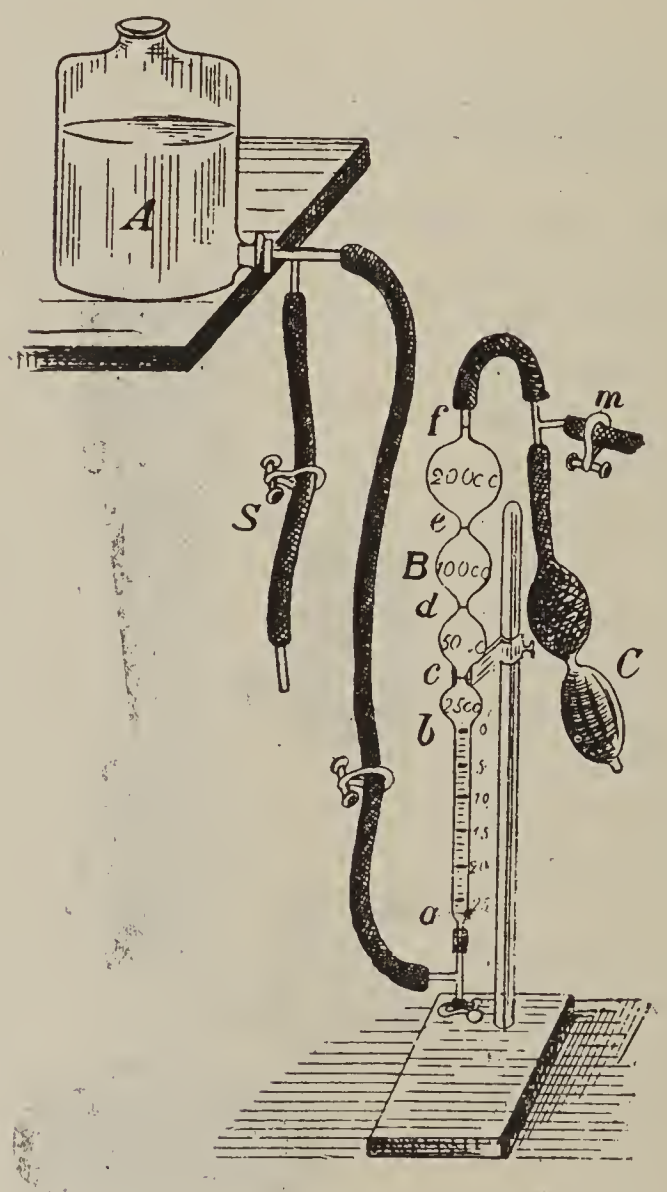
Pharmaceutical Technique.

A New Bunsen Burner.—It is difficult to see at the present time how a chemist could get along without the simple little apparatus designed by Bunsen. The burner has so many advantages over the old spirit lamps, smoky gas flames and charcoal fires, that chemists have generally accepted the Bunsen burner as the most perfect piece of heating apparatus, and it is surprising how little has been done in the line of increasing the heating capacity of the burner. The green central cone of the ordinary burner shows imperfect combustion and all the heating effect comes from the outer bluish cone. This serious defect is entirely done away with in Alton's Improved Bunsen here illustrated. It combines an automatic suction and continuous draught movement, thus forcibly mixing air and gas in the cone-shaped tube, and this mixture is then burned on the wire gauze cap. In the ordinary Bunsen burner the air and gas stream up the narrow



straight tube with great speed and they have hardly time to come into intimate mixture before reaching the flame; but in Alton's burner the gases are prevented from rushing straight up to the flame, first, by giving them more room in the cone-shaped tube, and second, by causing the gases first to pass through the wire gauze cap. As a result we have perfect combustion from the very base of the cone to its top. There is only one deep blue cone in this burner; the inner green cone of the ordinary burner, consisting of unburnt gas and air, has vanished. The widening of the tube toward the top has another advantage, namely that it gives a greater surface to the burning cone for the same amount of gas than does the ordinary burner. By virtue of the wire gauze cap the burner can be turned down very low without danger of the flame "striking back." A separate wire gauze cap may be had with the burner, which is provided with a small binding post for holding a platinum wire or spoon when the burner is to be used as a source of sodium or some other light. The burner is made by the Northern Light Co., 516 Gates Avenue, Brooklyn, N. Y. *Oswald Schreiner.*

A New Measuring Pipette and Burette. — Otto Bleier describes an apparatus for accurately measuring large portions of distilled water, as is necessary, for instance, in making normal solutions. On an elevated shelf is the stock bottle or reservoir *A*. The tube *S* is used for drawing water which is not to be measured. Another tube, provided with a pinch cock, connects with the measuring burette *B*. This burette has a total capacity of 400 cc.; the lower graduated portion from *a* to *b* holds 25 cc., and the bulbs *b*—*c*, *c*—*d*, *d*—*e*, and *e*—*f*, 25, 50, 100, and 200 cc. respectively. To the upper end of the burette is connected a piece of tubing which connects with the short piece of tubing *m*, supplied with a pinch cock and with the pressure bulbs *c* by means of a T-tube. Let it be required, for instance, to measure off 946.75 cc. The completely filled burette is emptied twice (800), then the bulb *e*—*d* once (100). Now the water from the bulb *d*—*c* is allowed to flow out into another vessel and then the remaining 46.75 cc. are drawn from the burette.



[Chem. Centr.-Blatt, 69, p. 593; from Chem. Ztg., 22, p. 59.] *Oswald Schreiner.*

Chemistry.

An Alkaloidal Principle in Wines.—Employing Stas's method for the isolation of alkaloids, M. G. Guérin obtained from different brands of wine a principle having all the properties of an alkaloid. This alkaloid is supposed to be identical with the one obtained by J. Oser* from the fermentation products of sugar. The formula of the alkaloid as found by Oser is $C_{13}H_{20}N_4$. [J. Phar. Chim. 1898, p. 323.] *H. M. Gordin.*

Limits of Precipitation of Alkaloids by Marmé's Reagent.—The limits of precipitation are for atropine 1:1600, cocaine 1:16900, veratrine 1:15400, strychnine 1:19200, brucine 1:14600, quinine 1:32300, cinchonine 1:18400, aconitine 1:13700. [Chem. Centrbl. 10, p. 636; from Ann. Phar. de Louvain 1897, p. 145.] *H. M. G.*]

Extraction of Alkaloids.—Siedler and Thoms† recommend for the extraction of alkaloids a chloroform solution of ammonia, which is obtained by saturating well cooled chloroform with dry gaseous ammonia. The exhaustion is said to be very complete.

[Phar. Centralhalle 1898, 39, p. 167.] *H. M. G.*

Chloralhydrate as Solvent for Alkaloids.—B. Mauch (Festschr. Versamml. deutsch. Apoth. Ver. in Strassburg) recommends a 75 p. c. solution of chloralhydrate as a solvent for alkaloids in toxicological researches. The alkaloidal reagents can in most cases be directly applied to the solution and the reactions are said to be much more delicate than with other solvents.

[Phar. Centrh. 39, p. 187.] *H. M. G.*

Constitution and Synthesis of Some of the Most Important Alkaloids.—Morphine. $C_{17}H_{19}NO_3 + H_2O$. The three oxygen atoms have different functions. One belongs to a hydroxyl group of a phenol, which imparts to morphine an acid character. The hydrogen of this hydroxyl is replaceable by alkyl or acyl groups. Codeine is the methyl ether of morphine and was obtained by Grimaux[1] by methylizing morphine with methyl iodide in the presence of alkali.

The second oxygen atom belongs to an alcoholic hydroxyl.[2] The third oxygen atom has an indifferent character and is bound to two carbon atoms as in ethers.[3] The nitrogen atom is tertiary and belongs to a ring. The tertiary character of the nitrogen is proved by exhaustive methylization and by converting morphine into methyl morphine: $C_{17}H_{16}O(OH)(OCH_3)=N—CH_3$ (Hesse). The latter is capable of combining with only one molecule of methyl iodide which proves the tertiary nature of the nitrogen atom.

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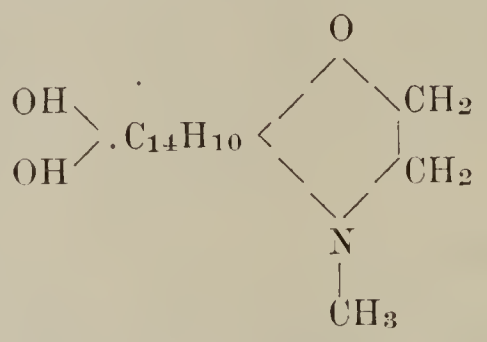
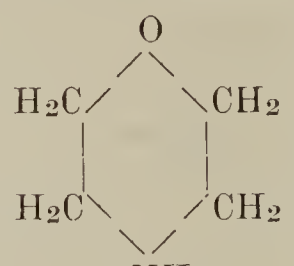
* Bull. Soc. Chim. 11, p. 295.
† Ber. deutsch. pharm. Ges. 1898, p. 28.
[1] Compt. rend. 92, pp. 1140, 1128, and 93, p. 67, 217.
[2] Hesse: Ann. Chem., 222, p. 203.
[3] Vongerichten: Ann. Chem., 210, p. 105.

Fourteen of the seventeen carbon atoms belong to a phenanthrene ring; this is proved by the fact that the nitrogen-free decomposition products of morphine are all derivatives of phenanthrene. Of the other three carbon atoms one is linked to nitrogen as a methyl group and two as oxethyl. This is shown by the fact that among the products into which methyl morphimethin splits up by the action of acetic anhydride, Knorr obtained alkylamines and oxethyl-dimethylamine, $OH.CH_2.CH_2.N.(CH_3)_2$. Basing himself upon these considerations, Knorr set up the following formula for morphine:



It is then a derivative of tetrahydro dioxy-phenanthrene to which is linked a morpholine ring.



Morpholine was obtained synthetically by Knorr.[4]

Atropine. The partial synthesis of this alkaloid was carried out by Ladenburg in 1879. Atropine is easily saponified into tropic acid and tropine. By treating the tropic ester of tropine with hydrochloric acid, Ladenburg regenerated atropine. Tropine has not yet been obtained synthetically, though much light has been thrown upon its constitution by the researches of Ladenburg, Merling and lately by Willstädter. Tropic acid was synthetized by Ladenburg according to the following scheme:

$$C_6H_5.CO.CH_3 \xrightarrow{PCl_5} C_6H_5.CCl_2.CH_3 \longrightarrow$$

$$\xrightarrow{\text{KCN in alcoholic solution}} C_6H_5.C(OC_2H_5)\begin{matrix}CH_3\\CN\end{matrix}$$

$$\xrightarrow{\text{Saponification}} C_6H_5.C(OC_2H_5)\begin{matrix}CH_3\\CO_2H\end{matrix}$$

$$\xrightarrow{HCl} C_6H_5.C\begin{matrix}CH_2\\CO_2H\end{matrix} \text{ (Atropic acid)}$$

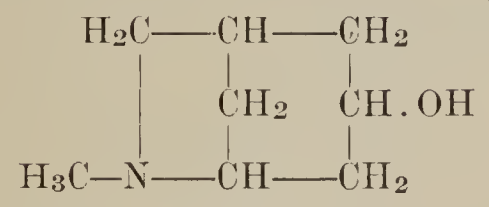
$$\xrightarrow{ClOH} C_6H_5.CCl\begin{matrix}CH_2OH\\CO_2H\end{matrix} \text{ (Chlorotropic acid)}$$

$$\xrightarrow{\text{Reduction}} C_6H_5.CH\begin{matrix}CH_2OH\\CO_2H\end{matrix} \text{ (Tropic acid)}$$

It is α-phenylhydracrylic acid.

[4] Phar. Centrh. 38, p. 354; 39, p. 111.

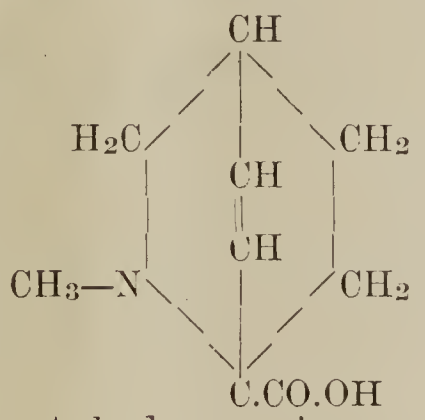
According to Willstädter, the formula of tropine is as follows:



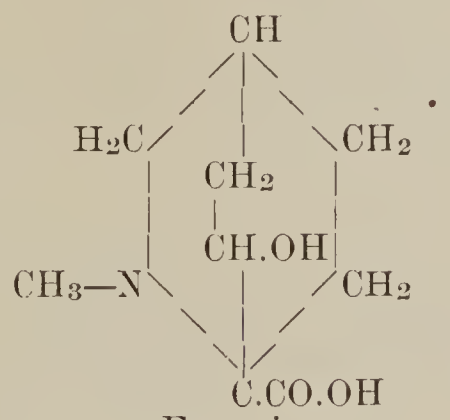
It is a meta derivative of hexahydrophenol.

Cocaine. This alkaloid is the benzoyl-methyl ester of ecgonine, as is shown by its splitting up into benzoic acid, methyl alcohol and ecgonine, when heated with weak alkali. $C_{17}H_{21}NO_3 + 2H_2O = C_7H_6O_2 + CH_3OH + C_9H_{15}NO_3$.

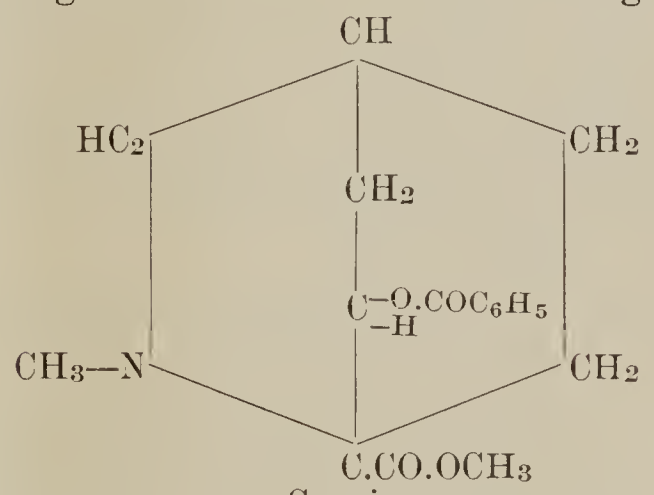
When treated with acetic anhydride, cocaine loses one molecule of water and is converted into anhydroecgonine. According to Fisher and Tahara[5] the formulae of these bodies are as follows:



Anhydroecgonine.



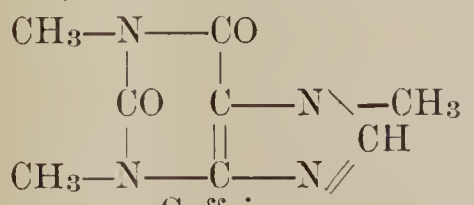
Ecgonine.



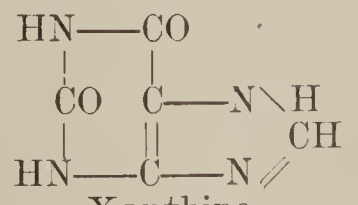
Cocaine.

These formulae contain the same ring system as tropine. The cocaine formula is derived from that of tropine by substituting for two atoms of hydrogen the groups $C_6H_5.CO.O$ and $CH_3.O.CO$.

Caffeine. This is trimethyl xanthine. According to the latest researches of E. Fisher,[6] the formulae of caffeine and xanthine are:



Caffeine.



Xanthine.

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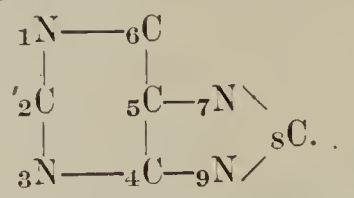
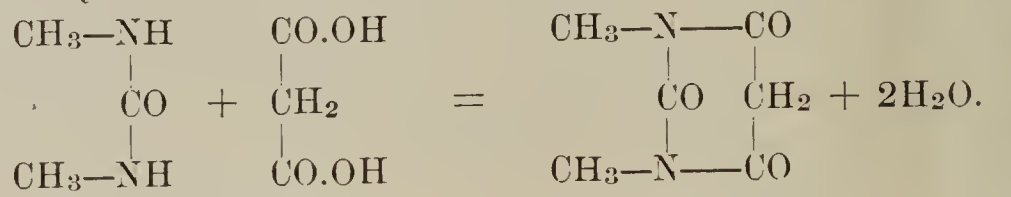
[5] Ber. d. d. chem. Ges., 26, p. 325.
[6] Ber. d. d. chem. Ges., 30, p. 553.

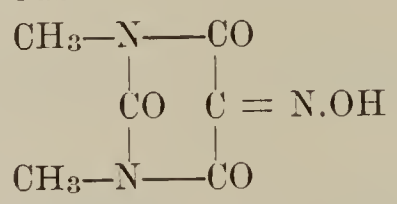
Both these formulae E. Fisher derives from that of the so-called "purin" which contains the following ring:



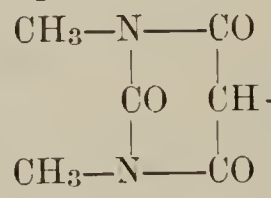
Caffeine is 1. 3. 7. trimethyl, 2. 6. dioxy-purin. The total synthesis of caffeine was accomplished by E. Fisher and L. Ach[7] by the following steps. Dimethyl urea and malonic acid give dimethyl malonyl urea:



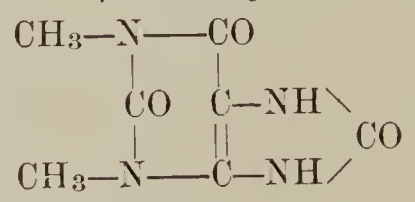
By the action of nitrous acid this is then converted into dimethyl violuric acid:



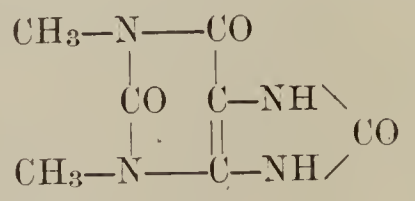
which by reduction and subsequent treatment with potassium cyanate is converted into dimethyl-pseudouric acid:

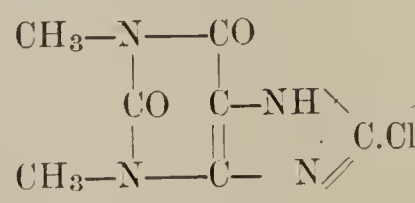


When treated with oxalic acid, the pseudouric acid loses one molecule of water and is converted into γ-dimethyl uric acid



which when treated with phosphorus penta- and oxychloride is converted into chlortheophylline. The latter by reduction with hydroiodic acid and subsequent methylization is converted into caffeine.





Chlortheophylline.

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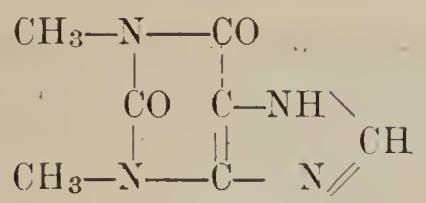
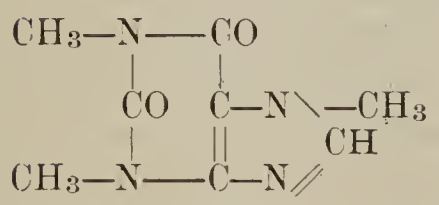
[7] Ber. d. d. chem. Ges., 28, p. 3135 (1897).



Theophylline.



Caffeine.

Or the chlortheophylline is converted into chlorcaffeine which is then reduced to caffeine. [Phar. Centralh., 39, p. 201.] *H. M. G.*

The Detection of Iodine in Sodium Chloride, Sodium Bromide and Potassium Bromide. — O. Wentzky finds, when testing for iodides with ferric chloride and starch, as prescribed by the Germ. Pharm., that when but traces are present the reaction does not occur until after some time, while if a few drops of dilute permanganate solution are added, the blue color appears much sooner. The following test is therefore proposed: 20 cc. solution sodium chloride or 5 cc. sodium bromide (5 p. c.) are treated with one drop solution ferric chloride (Liq. Ferr. chlor. 1 and water 2) and a few drops of freshly prepared starch solution and then about 1 cc. permanganate solution ($\frac{1}{100000}$) are added, if the color does not appear at once iodine is absent. Still better results are obtained when dilute sulphuric acid is substituted for ferric chloride solution in the above test.

[Apoth.-Ztg. 13, p. 119.] *W. A. P.*

Detection of Morphine in Emulsion of Cod Liver Oil. — L. E. Sayre uses the following method for the detection of morphine in cod liver oil emulsions: To the emulsion, alcohol is added in sufficient quantity to precipitate the gum. The mixture after thoroughly separating is filtered. The filtrate is heated over a waterbath until the alcohol is dissipated, then acidulated and thoroughly washed with ether. From the aqueous solution the ether is driven off by warming, the solution is rendered alkaline with sodium hydroxid and then shaken out with chloroform containing 10 p. c. of alcohol. To the residue obtained from the chloroform solution the usual tests of identity are applied. This method, when used with emulsions of cod liver oil containing acacia as the emulsifying agent, was entirely satisfactory, giving with emulsions which contained ½ grain morphine sulphate per fluid ounce unmistakable reactions with the sulpho-molybdate test, the ferric chlorid test and the iodic acid test while the residues from an emulsion containing no morphine gave negative reactions.

[Druggists Circular, 1897, p. 52.] *W. A. P.*

The Differentiation of Bicarbonates from Carbonates in Mixtures. — The usual test for carbonates in presence of bicarbonates consists in adding the salt to be tested to a solution of magnesium sulphate, which, if bicarbonates only are present, remains clear while carbonates will at once produce a precipitate of basic magnesium carbonate. A. Leys, finding that the precipitate so produced is soluble in solutions of alkaline carbonates and of borax, instituted a series of experiments which show that in a solution containing 32 parts of sodium bicarbonate to 68 parts of crystallized sodium carbonate, the carbonate reaction is entirely overcome by the solvent action of the bicarbonate, no precipitae being obtained no matter how much magnesium solution was used. Neither could a reaction be obtained in a solution containing 40 gm. borax to 60 gm. sod. carb. When calcium sulphate was substituted for magnesium sulphate the detection of carbonates in presence of bicarbonates was successful in every case, even the traces in sodium bicarbonate and in commercial borax could be detected. To apply the test the solution is added to a saturated solution of calcium sulphate, if only bicarbonates are present a delicate, crystalline precipitate of calcium sulphate will appear, while if a trace of normal carbonate is present a white turbidity, due to amorphous calcium carbonate appears at once. To detect the normal carbonate in sodium bicarbonate it is recommended to treat it with a quantity of water insufficient for complete solution and to test the liquid decanted with calcium sulphate.

[Ann. Chim. anal. appl. 3, p. 44.] *W. A. P.*

Comparative Accuracy of Titrimetric and Gasometric Methods of Estimating Hydrogen Dioxide in Presence of Various Preservative Agents. — In the valuation of hydrogen dioxid solutions titration with permanganate is usually used, as this method is more easily applied than any other and has always been presumed to give sufficiently accurate results. It having been shown that the presence of glycerin affects the accuracy of the method, Carl E. Smith has compared the reliability of the various methods recommended for the estimation of hydrogen dioxid and also ascertained to what extent the presence of glycerin and such substances as boroglycerin, boric, salicylic and benzoic acids, acetanilid and salol, said to be added to solutions as preservatives, will interfere with the estimations.

The methods experimented with were: 1. The volumetric permanganate method of the U. S. P. 2. The gasometric permanganate method. For this the author adopted this procedure: The measuring tube, graduated to 100 cc., is filled with a saturated solution of sodium chloride, 2 cc. of the sample are measured into the funnel tube and carefully admitted into the measuring tube; 10 cc. of dilute sulphuric acid are then introductd in the same way, and finally 20 cc. of a 2 percent solution of permanganate. When the reaction has nearly ceased, the tube is inverted occasionally during five minutes.

to insure complete decomposition of the hydrogen dioxid. From the volume of gas noted, after correcting for temperature, the percent of H_2O_2 is calculated in the usual manner. 3. The gasometric hypochlorite method. This method, recommended by D. B. Dott,[1] substitutes a solution of chlorinated soda for the permanganate solution. 4. The volumetric thiosulphate method. The process first recommended by C. T. Kingzett[2] and later by H. Thoms[3] has been modified by the author, who directs: Dilute the solution to be tested to exactly ten times its volume with distilled water, measure 5.6 cc. of the dilution (= 0.56 cc. of sample) into a beaker or flask, add 5 cc. of 10 percent sulphuric acid and 5 cc. of a 10 percent solution of potassium iodide, and let the mixture stand for five minutes. Then gradually add N ⅒ thiosulphate, with constant agitation, until the color is discharged. If the solution remains colorless upon standing a few minutes, the titration is finished; if the color reappears, sufficient thiosulphate must be added to remove it. The total number of cc. of thiosulphate solution used indicates the number of volumes of available oxygen in the sample or percent strength is obtained by multiplying the volume strength by 0.3038. (These calculations are based on the reactions: $H_2O_2 + 2KI + H_2SO_4 = I_2 + K_2SO_4 + 2H_2O$. $I_2 + 2Na_2S_2O_3 = 2NaI + Na_2S_4O_6$.) If the solution is much stronger than ten volumes, the results probably are too low and a new determination should be made, with a proportionate increase of acid and potassium iodide.

From the results obtained the following conclusions are drawn:

The volumetric permanganate method is accurate and reliable for the valuation of solutions containing only mineral acids and their alkali salts as impurities. With solutions containing glycerin or boroglycerin in quantities below 5 percent, the results are but slightly raised; in presence of larger amounts the method is inapplicable. Ethereal solutions of hydrogen dioxide give results a little too high. Salicylic acid interferes seriously, even in small amounts. The use of this method should be avoided whenever organic substances are suspected to be present. Applied gasometrically, the permanganate method is unreliable in all cases.

The hypochlorite method gives reliable results in absence of preservatives. In their presence they are liable to fall too low, and with ethereal solutions they are too high.

The thiosulphate method is simple, rapid and accurate, and its accuracy is not lessened by the usual preservative agents, nor by large quantities of glycerin. It is applicable in all cases, so far as known.

It can be said of the gasometric determinations in general that they require more time, attention and apparatus than the titration methods, and

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[1] Ph. J. Tr., 1890, p. 833.
[2] J. Chem. Soc., 1890, p. 802.
[3] Arch. Pharm., 1897, p. 335.

that the results obtained by them can not be expected to approach the latter in accuracy, unless suitable corrections, requiring tedious calculations, are made for variation in temperature and atmospheric pressure at least.

[Am. J. Pharm., 70, p. 225.] *W. A. P.*

Botany and Pharmacognosy.

Sweet Gum Oil of the leaves of *Liquidambar styraciflua* L. The leaves of the sweet-gum tree have, when bruised, a peculiar turpentine-like odor. When distilled they yielded only 0.085 per cent of oil, having a greenish-yellow color, a spec. grav. of 0.872, the optic. rotat. — 38° 45′, the saponification number 0.9 and the acetylisation number 25.2 The oil contains, besides terpene, borneol and bornyl acetate, the odor recalls that of the oil of *Abies pectinata* D. C.

Oil of Lophanthus. — Prof. Edw. Kremers has kindly favored us with a specimen of the oil of *Lophantus anisatus* Benth., growing abundantly upon the plains of Wisconsin, Minnesota and Nebraska. The oil, distilled in the Pharmaceutical Laboratory of the University of Wisconsin, has the spec. grav. of 0.943 at 20°, the optic. rotat. — 7° 10′, and has a pleasant anisic odor somewhat recalling the oil of *Solidago odora* Act. The amount of the specimen was insufficient for a further examination.

Orange Oil from Jamaica. — A specimen of this oil does not speak in favor of its ever becoming a competitor of the Messina oil of oranges, on account of its stale and vapid odor, making the impression that it had been obtained from rotten fruits and had been improved by the admixture of some distilled oil. [Report Schimmel & Co., Apr. '98, p. 53.] *E. K.*

Price of Quinine. — An interesting table has been prepared by Pix and Davids of Amsterdam graphically representing the fluctuations in the price of quinine during the last seven years.

[Chem. & Drug., 52, p. 289.] *R. H. T.*

Yass Leaves. — A drug offered on the London market under this name consisted of leaves, fruit and twigs of the common myrtle, *Myrtus communis*, together with broken leaves, twigs and fruits of a pistacio, probably *Pistacio khirjik*. [Chem. and Drug., 52, p. 367.] *R. H. T.*

Chillies and Capsicums. — In a paper before the Pharmaceutical Society of Great Britain, Mr. Holmes treats the subjects of chillies and capsicums from the botanical and commercial standpoints. A number of drawings illustrate the article. Owing to the obvious difficulty in abstracting this article, the interested reader is referred to the original reference.

[Chem. & Drug., 52, p. 290.] *R. H. T.*

Amomum Danielli.—There appear occasionally on the market as cardamoms the seeds of *Amomum Danielli*, the yellow amomum or longouze of Madagascar. In shape they are cylindrical-oblong, of a dark brown color with a prominent hilum of a lighter shade and are highly polished and have a camphoraceous taste. The pulp of the fruit is eaten by the natives of Guinea and the juice of the stem is said to be used in cholera and ophthalmia, but the seeds are not known to possess any important medicinal virtue. The roots are astringent. [Chem. & Drug., 52, p. 367.] *R. H. T.*

Wangchi.—Fruits from Shanghai called *Wangchi* are those of *Gardenia florida*, a shrubby plant, native of China, Japan and the Bonin Islands. These fruits are about 1½ to 2 inches long, ½ inch in diameter, orange-brown in color, the calyx prolonged down the fruit in the form of prominent ribs. The seeds are numerous, and held together by an orange colored pulp. The Chinese employ these fruits extensively as a yellow dye for silks, for coloring paste used for seals and also for coloring bean-curd cake. Under the name of *Kuchi-nashi* they are used medicinally in Japan, their properties being emetic, stimulant and diuretic. [Chem. & Drug., 52, p. 368.] *R. H. T.*

Hai-tao.—A drug known in China as *Hai-tao*, used in preparing "vegetable gelatine" or "isinglass," is probably *Laminaria bracteata*. It comes in strips a meter long and about 6 cm. wide, having a whitish-dusty, or dirty brown color. In water it softens up and shows a greenish-brown color and is tough and leathery. On boiling for some time in water, the liquid assumes a thick, mucilaginous consistency, but no gelatinization follows. In Japan, this alga is cooked and eaten. It is shipped in large quantities in balls weighing one picul each to China where it is likewise used as food. It is probably identical with *Hai-tai* and *Kwanpu* or *Kai-wan* prescribed in menstrual troubles and used to increase uterine activity.

[Handelsbericht Gehe & Co., 1898, p. 25.] *R. H. T.*

Cinchona Alkaloids in Grafts, Seedlings and Cuttings.—P. Van Lursum, acting director of the government cinchona plantations in Java, has concluded after much research concerning the alkaloidal constituents of and relative values of bark grown from grafts, cuttings and seedlings, that 1) there is no certainty whatever that the grafts or cuttings of trees having a known percentage of alkaloid will produce the same percentage as the mother tree. 2) Seedlings of *C. Ledgeriana* will no doubt produce less in the first four years than *Ledgeriana* grafts; but the yield of the former will be about double that of the grafts after the lower branches of the latter have been picked. 3) Cuttings produce less than either seedlings or grafts, even though the root-bark of the cutting can also be used.

[Chemist & Druggist 52, p. 591 from Naturk. Tijdschr. voor Ned. Ind.]
R. H. T.

Caoutchouc from Roots. — Plants probably belonging to the genus *Carpodinus* or *Clitandra*, growing on the Kwango, a tributary of the Congo, furnish caoutchouc from the roots. The shrubs, 20 to 60 cm. high, are removed from the ground and allowed to wilt. The roots are cut up into pieces 20 cm. long, tied up into bundles and exposed for five or six days to the sun. They are then macerated in water for ten days to decompose the woody parts and then beaten with wooden sticks. The remaining mass is again cleaned by further boiling, beating and drying and in this form comes on the market in pieces an inch long. It contains 50 percent of caoutchouc.

[Apoth. Zeit. 13, p. 170; from Tropenpflanzer II, 1898, No. 2.] *R. H. T.*

Cinchona from West Africa. — The cultivation of cinchona in Portugese West Africa was commenced more than 30 years ago with the planting of *Cinchona pahudiana*. Between 1869 and 1871 a number of plants of *C. succirubra* and *C. officinalis* were given out by the Botanic Gardens in Coimbra and from time to time the gardens have assisted in extending the cultivation of various species, so that by the end of 1887, 1,600,000 cinchona trees, mostly *C. succirubra*, were flourishing. The best bark is obtained from trees growing at an altitude of 3,300 ft. Lisbon takes nearly all the bark produced for the manufacture of quinine.

[Chemist & Druggist, 52, p. 591.] *R. H. T.*

Kousso Honey.—In a recent notice King Menelik of Abyssinia appears in a new rôle. This monarch, learning that kousso flowers, *Brayera anthelmintica*, are valuable as an anthelmintic, has made an interesting experiment with the purpose of learning whether the honey gathered from these flowers may not also possess this valuable property. He planted numerous trees of the sort in question in his garden and at the flowering season placed several hives of bees near them. After honey had been stored, a test was made. A tablespoonful of the honey dissolved in water gave the desired results. This kousso-honey has not yet reached the European markets.

[Pharm. Post, 31, p. 120.] *R. H. T.*

Kino. — A growing scarcity of kino in the market has led to inquiries concerning its source and the method of obtaining it.

Pterocarpus marsupium Roxb. grows to its greatest perfection over the Western Ghauts, Travancore, Malabar, South Canara and Coimbatore in India. It furnishes a most perfect and invaluable timber, suitable for any in- or out-door work, being unaffected by rain or sun and, because of the large amount of essential oil contained, it is not attacked by white ants and other insects.

The leaves form an excellent fodder, which is much in demand. Little or nothing is known of the essential oil alluded to. The juice, or gum kino, is

obtained by making a perpendicular incision in the trunk with lateral ones leading into it. At the foot of the tree a vessel is placed to receive the juice. In Canara, little cups made of leaves are used, and the gum there collected assumes the shape of concavo-convex cakes 3 to 4 inches in diameter, which are broken up and garbled by the dealers.

The main supply, however, is from the government forests in North Malabar.

Although it should be inspissated without artificial heat, for some reason it appears that of late years the gum has been boiled in the forest and has arrived in the low country in a semifluid state. In this condition, it takes considerable time to harden and loses about one-third of its weight.

When dry, Malabar kino consists of dark, blackish-red, brittle, angular fragments rarely larger than a pea and easily splitting into still smaller pieces which are amorphous under the microscope, translucent, and of a bright garnet hue. They sink in cold water, in which by agitation they are partly soluble, the solution having an astringent taste and throwing down a pale, flocky deposit, which is discolored by heat, only to be thrown down again in more voluminous forms on cooling.

Aside from its use in medicine, kino is used in the manufacture of certain wines. It has also valuable dyeing properties and should prove valuable in tanning.

The author (anonymous) believes the supply in India is large, but lack of knowledge of local conditions hinders the marketing of it.

[Chem. & Drug., 52, p. 355.] *R. H. T.*

Daviesia latifolia.—J. Bosisto of Victoria, Australia, calls attention to this plant as worthy of investigation because of its valuable medicinal qualities.

It is popularly known in the districts which produce it as the Native Hop Bush, the name being selected rather because of its bitter taste than on account of its resemblance.

This shrub grows 2 to 3 feet high, bearing abundant leaves of a bright green color one to three inches long. They are strongly veined and are borne on a petiole one-half of an inch high. The peduncles are axillary, solitary and many-flowered. The flowers are pea-shaped (this plant being a member of the *Leguminosæ*), very minute, each petal on the outside bright golden colored, the inner part dark purple. The legumes are triangular, one to two seeded; the seeds are bean-shaped, very small and spotted purple and brown. The whole plant is bitter, the leaves and flowers especially, the buds slightly. The taste is very persistent but not unpleasant.

The bushmen and settlers say that the infusion, taken two or three times daily in doses of a teacupful is the best mode of administration.

[Pharm. Journ., 52, p. 187.] *R. H. T.*

Cocaine Manufacture in India.—The coca plant, *Erythroxylon coca*, was introduced into Ceylon from Kew in 1870 and it is probable that the plants now cultivated in Madras came from the same source. Three years later the experimental cultivation made at the Sikkim Cinchona Plantations proved a failure, and further attempts to raise the plant were abandoned. In 1894, however, the Madras government was again approached as to the advisability of instituting experimental cultivation on the lower slopes of the Nilgiris, the failure of the Sikkim crop being apparently due to the too great elevation as well as to the unsuitable climate of that plantation. The government decided that the demand in India for the alkaloid was too small to justify anything beyond experimental cultivation. The latter was accordingly commenced, and the results which are now at hand are eminently satisfactory. In the early part of this year the collector and the chemical examiner of the Nilgiri Gardens submitted further reports dealing with the expenses in growing the plant and in extracting the alkaloid, and as the Madras government is assured that the use of the drug has greatly increased, that the alkaloid can be readily extracted and that the plant flourishes on the Nilgiris, it considers that it might, for some time to come be profitable to private individuals to take up the cultivation of coca.

The enormous consumption of the alkaloid throughout the world may be judged by the fact that 22½ million pounds of dried leaves are produced annually in Peru and Bolivia. This represents about 55,000 pounds of cocaine. It is owing most probably to the great increase in the exportation of the plant from South America and its consequent cheapening in the European market that coca cultivation has not materially developed in India.

[Imperial Institute Journal 4, p. 14.] *R. H. T.*

Cacao Preparation in Cameroon.—In Cameroon, Africa, according to Friederici, the best grade of cacao known is made. The golden-yellow fruits are cut from the trees, opened and the seeds removed. The process of curing follows a fermentation which is carried on in the curing-house. Fermentation, which is hastened by the self-heating of the product, is varied in duration according to the size of the harvest and according to the weather prevailing. During this process the seeds lose their originally bitter taste without sacrifice of the qualities desired. When the violet-colored cotyledons have taken on a chocolate-brown color, fermentation has gone far enough. This lasts usually about 60 hours, the temperature ranging between 30° and 43° C. The seeds are now washed to free them from impurities, dried in the air, and packed in sacks. Throughout the entire process, contact with metal is anxiously avoided.

[Apoth. Zeit. 13, p. 169; from Der Tropenpflanzer II, 1898, No. 1.]
R. H. T.

Literary.

Books and Pamphlets Received.

Verlag von Johann Ambrosius Barth—Leipzig. Monographien aus der Geschichte der Chemie, herausgegeben von Dr. Georg W. A. Kahlbaum, Professor an der Universität Basel. I. Heft: Die Einführung der Lavoisier'schen Theorie im besonderen in Deutschland; Ueber den Antheil Lavoisier's an der Aufstellung der das Wasser zusammenfassenden Gase von G. W. A. Kahlbaum und August Hoffmann. Ein Bd., pp. xi, 211. 1897. M. 4.00.

Art. Institut Orell Fuessli—Zuerich. Manuale der neuen Arzneimittel für Apotheker, Aerzte und Drogisten, enthaltend über 2000 neue und neueste Arzneimittel, zusammengestellt von J. Mindes, Magister Pharmaciæ. Zweite vermehrte und verbesserte Auflage. Ein Bd., pp. 365.

Verlag von Julius Springer—Berlin. Helfenberger Annalen 1897. II. Band des II. Dezenniums. Im Auftrage der chemischen Fabrik in Helfenberg bei Dresden, herausgegeben von Dr. Karl Dieterich. Ein Bd., pp. 46. M. 4.00.

Author—Helfenberg. Ueber südwestafrikanisches Gummi Kolonialgummisorten aus Angra-Pequena Hinterland). Pamphlet, pp. 6, reprinted from Berichte d. d. Pharm. Gesellsch. 1898.

U. S. Dept. of Agr.—Washington. Dodders infecting clover and alfalfa. Circular No. 14, Division of Botany, pp. 7. 1898.

Authors—Ames, Iowa. Contributions from the Botanical Dept., No. 9.

Iowa Agr. Exp. St.—Ames, Iowa. Bulletin No. 37. Sugar beet investigations—1897.

Reviews.

Contribution III to the Coastal and Plain Flora of Yucatan by Charles Frederick Millspaugh, M. D., Curator, Department of Botany. Field Columbian Museum Publication 35, Botanical Series Vol. I, No. 4. Chicago, January, 1898.

The new contribution to the flora of Yucatan deals with plants collected in this region at various times by various collectors. The

first systematic attempt to study with thoroughness the flora of Yucatan was made by Dr. Arthur Schott while employed in 1864—'66 by the Mexican government in making a geological study of the peninsula. The Field Museum has acquired this collection and his plants form the basis of a considerable part of this number. Other collections have been included, viz., that of Mr. Witmer Stone (1890), Dr. Geo. F. Gaumer (1897) and others.

A number of new forms are described indicating the richness of this region to the systematist, who delights in forms new to science. To the general reader, however, sundry side remarks on plants better known are probably of greater interest. *Raphanus Raphanistrum*, the raddish, is reported wild, a large number of plants coming up in February just after Orin's circus troupe had encamped on the spot. The animals had been fed on American and Mexican hay. It was found again at another point visited by this circus. *Indigofera Anil* L. was collected at Merida in 1865 by Schott. It is abundant in north eastern Yucatan, where it was once extensively cultivated and from whence indigo was exported as late as 1885. In 1896 not one plantation existed at Izamal, formerly the center of its greatest production. *Gossypium herbaceum* L., the cotton plant, occurs as an herb 10 feet high often becoming a shrub reaching 15 feet in hight. It was extensively cultivated during the Civil War in the United States, but it is now grown on a small scale for domestic use only. *Pithecoctenium hexagonum* D. C., is a vine 50 feet long, common in the forests near Izamal. Mayas use the seeds as a remedy for frontal headache by moistening and applying them to the forehead or temples according to the location of the pain.

The number closes with notes and descriptions by Prof. T. Radlkofer, Dr. Loesener and Dr. Millspaugh. *Rodney H. True.*

DICTIONNAIRE DE PHYSIOLOGIE par Charles Richet, Professeur de Physiologie à la Faculté de Médecine de Paris. Deuxième fascicule du tome III, pp. 321—608, avec 87 gravures dans le texte. Ancienne Librairie Germer Baillière et Cie., Paris. 1898.

Besides a number of cross references, the eighth fascicle contains the conclusion of the article *champignons* and eighteen primes of which twelve are on subjects decidedly chemical in nature. Of the remaining six articles not chemical, one is a biography of M. A.

Chaveau, a French physiologist and professor at the Museum of Natural History at Paris. Several are from the realm of zoology, viz. cat (16), bat (5), horse (125) and dog (75). The figures in parenthesis indicate the number of pages devoted to each. The article on tickling (*chatouillement*) may be considered as belonging to physiology proper. Of those distinctly chemical in nature, the primes chanorolëique acid, an unsaturated acid from hemp seed; chelidonine, a papaveraceous alkaloid; and cheledonic acid; also chiratine, a resinous bitter principle extracted by Hohn from the leaves of *Ophelia chirata*, pertain to the vegetable kingdom. The article on chitine, on the other hand, pertains to animal chemistry. The articles on chloral, chloralamide, chloral-ammonium, chloralimide, chloralose, chlorates and chlorine pertain principally to compounds commonly designated synthetic as to their mode of preparation.

In the article on chlorine the chemistry and physiology not only of this element, but also of its hydrogen and hydroxy acids, and of the metallic chlorides are discussed, whereas the chlorates constitute a separate chapter. For the study of the general economic aspect, especially animal, the reader is referred to the articles on the stomach and on digestion which are to appear later.

The strictly chemical part of these articles is naturally limited and the reader is referred to general works on the subject for further information. The action of free chlorine on the organism both externally and internally is given, also the internal action of hydrochloric acid. In connection with the antiseptic action of this acid, an interesting reference is made to Glauber, the discoverer of the acid, who in a book written in 1659, the title of which is given as *Consolation des navigants*, exalts the preservative properties of the spirit of salt against putrefaction. The concentration at which the acid will kill various germs is also given. It would seem, however, that the writer of this article had not taken notice of the work done along this line during the last three years, which is rather surprising since many of the articles seem to have been brought up to the very date of imprint. The amount of chlorine in the form of chlorides in food stuffs, in the blood and muscles of various animals etc. is given in considerable detail. The article is not yet completed.

That on the chlorates, after a brief general introduction, treats principally of the chlorates of potassium and sodium, with an appendix on the perchlorates. On p. 594 the author states that

potassium chlorate was first described by Berthollet in 1876, whereas on the following page he states that it was discovered by the same chemist in 1786; evidently a slight typographical error which escaped the proof reader. Whether similar errors have crept into the tables of solubility for both potassium and sodium chlorate it is difficult to tell for the authors of the tables are not mentioned and no two experimenters seem to agree perfectly as to the solubility of these salts. Disagreement with several of the best authorities, including a French authority, would seem to indicate an error in copying or an oversight in proof reading. The statement regarding the formation of the chlorates is rather unfortunate. The physiology of this group naturally constitutes more interesting reading than the introductory, rather elementary chemistry. The opinion expressed by Fourcroy, Garnett and others that the chlorates give up their oxygen to the blood and are reduced to chlorides has been disproved repeatedly. Yet although Woehler as early as 1824 showed that potassium chlorate passed at least in part undecomposed through the system and expressed his doubts as to its reduction; and although others showed the presence of chlorate in the urine of persons to whom it had been administered, the theoretically preconceived notion was not easily dispelled. It required later and more exact quantitative experiments showing that as much 95 to 99 p. c. of the chlorate could be recovered from the various secretions to dispel the older notion among physiologists. Even to-day, if the writer is permitted to generalize from the discussion of a recent medical meeting, physicians seem to be still of the opinion that the chlorates can be used for the artificial administration of oxygen.

In the otherwise very interesting article on chloral the chemistry is exceedingly meagre. The employment of the empirical formulas in the explanation of the decomposition of this compound into chloroform and formic acid, certainly must prove unsatisfactory. The structural formulas cannot have been rejected for reasons of economy, for the space granted would have accommodated the structural formulas twice over. It would seem also from the quantitative expression given, that the empirical equation failed to convey the correct nature of the decomposition even to the writer. The chemist who reads the article will further be interested to learn on how little evidence therapeutic theories are concocted. A discussion of these theories is out of the question, but they may be briefly enumerated:

1. Liebreich assumes that chloral is decomposed into a formate and chloroform which produces the anaesthesia; 2. The direct opponents of this theory do not believe in the hydrolysis of the chloral, but suppose this to act as such; 3. Vulpian shares Liebreich's view of the hydrolysis, but does not consider this reaction to produce the anaesthetic effect of the drug; 4. Tanret supposes that when the chloral undergoes decomposition in the blood, it produces carbon monoxide and carbon dioxide as in the test-tube in the presence of permanganate.

The chemistry of the chloraloses receives a much more liberal treatment. Of this class the first representative was prepared by Heffter in 1889, evidently without attaching much importance to it. Henriot and Richet, upon taking up the subject, found that the reaction by which it was prepared was of general application, and prepared a number of isomeric condensation products of anhydrous chloral with hexoses and pentoses. The therapeutic effect of this group is rather remarkable. Glycochloral or chloralose in some ways resembles chloral, in others strychnine, but it even more closely resembles morphine in its physiological behavior. In the different chloraloses these resemblances are brought out in varying degree.

In calling attention to a few of the minor defects, the writer by no means intended to detract from the general value of the work. This of such a nature that even more numerous typographical and other errors could not mar the undertaking at all seriously. It certainly can do no harm if some of the contributors, whose strength does not lie on the chemical side of their science, were to submit their manuscript to chemists either for correction or better still for cooperation. This can frequently be done to great advantage and will no doubt further improve this generally excellent work.

E. K.

ZUR AUSTILGUNG DER SYPHILIS. Abolitionistische Betrachtungen über Prostitution, Geschlechtskrankheiten und Volksgesundheit nebst Vorschlägen zu einem Syphilisgesetz. Von Dr. Med. Ernst Kromayer, Privatdocenten der Dermatologie und Syphilis. Universität Halle A. S. Ein Bd., pp. 105, mit 7 Curventafeln. Verlag von Gebrüder Borntträger, Berlin. 1898. M. 3.50.

This little book is a very desirable addition to the literature of hygiene and preventive medicine and it is a pleasure to welcome

a book of so high a character. The subject, although one of vital importance to public health, is very largely neglected. Aside from the physicians and those directly connected with the sufferers few appreciate the extent and gravity of the maladies. Dr. Kromayer here gives a clear and concise discussion of the hygenic aspects of syphilis and kindred diseases; the part played by prostitutes in the spread of these diseases; their magnitude and diffusion, and the spread of the sexual diseases among both the prostitutes and the community.

Statistics are brought forward to show the effectiveness of medical control especially as illustrated by the figures gathered in regard to the working of the "contagious disease acts" in England. After a criticism of the ordinary methods of control the writer makes proposals for a syphilis law and a reorganization of the methods of control.

There can be no question as to the value of securing laws such as are proposed and a wide circulation of the facts brought out in this book would greatly aid in securing the desired end. It is to be hoped that the book may have a large sale. Those who can read it in the original will be well repaid and we trust that an early translation of which it is well worthy may make it available for the English reading public.

W. D. Frost.

DIE EINFÜHRUNG DER LAVOISIER'SCHEN THEORIE IM BESONDEREN IN DEUTSCHLAND.

Ueber den Antheil Lavoisier's an der Feststellung der das Wasser zusammensetzenden Gase. Von Georg W. A. Kahlbaum und August Hoffmann. Ein Bd., pp. XI, 211. Verlag von Johann Ambrosius Barth, Leipzig. 1897. M. 4.00.

To those who believe that the study of the natural sciences should stand for something more than mental discipline and utility, namely for culture, nothing can be more encouraging than the interest that is manifested in recent years in the history of these sciences. Not only is the study of the past development of a science essential to a perfect understanding of the present status of that science, but for the development of the history of science in general. The evolution of science again constitutes an important chapter in the history of civilization. It is, therefore, through the study of the history of any

of the natural sciences that the study of such science assumes an important cultural factor in the development of its disciples. That the publisher of these monographs is imbued with the necessity of fostering this long neglected phase of scientific study is manifested by his motto: "Historische Studien gehören sehr wesentlich mit zur wissenschaftlichen Erziehung."

The object of these monographs is to afford a means for the publication of historical articles, which only too often are rejected by our scientific journals and are buried in the proceedings of local or provincial societies. In the selection of the subject for the first monograph the editor seems to have been especially fortunate: The introduction of Lavoisier's theory especially in Germany. The theory in question was the first stone laid for the foundation of our present period of chemical history. It is therefore sufficiently fundamental and broad to be of interest to every scientific chemist. The treatment of the subject is likewise fortunate for the initial number of this ephemeral series, because it clearly demonstrates that the study of originals may and indeed must assist in dispelling some of the erroneous views laid down in our histories of chemistry. The demonstration of the fact that even those historical treatises which we pronounce classical convey false ideas which can be corrected by a more careful study of originals certainly ought to stimulate further research. Even upon the subject under discussion, the authors point out that more extensive investigations in other countries besides Germany are still highly desirable.

The first monograph with the aid of an abundance of documentary evidence explodes the idea promulgated by Kopp and others that the antiphlogistic theory was more stubbornly opposed in Germany than elsewhere. Lavoisier himself for several years after his first exposition did not deny the rationality of the phlogistic theory, neither did he in the beginning consider his new explanation of the phenomena of combustion and calcification as diametrically opposed to the phlogistic theory. In our present judgment of this period of transition we are only too apt to view the opposition with our modern eyes and to make in operative our historic sense if we possess such.

Students of the history of chemistry will appreciate the value of the list of publications consulted in the documentary study of the two subjects. Both authors and publisher are to be congratulated upon the success of this first number. It is to be hoped that the

financial success will be such as to warrant the issue of a second number in the near future. With the growth of interest that is manifested in recent years, we may yet look forward to a veritable renaissance in the study of the history of the natural sciences and of science. *E. K.*

PRAXIS DER HARNANALYSE. Anleitung zur chemischen Untersuchung des Harns. Nebst einem Anhang, Analyse des Mageninhalts. Von Prof. Dr. Larsar-Cohn. Zweite Auflage. Verlag von Leopold Voss, Hamburg. Brochure, pp. 40. 1898. M. 1.00.

Many pharmacists and physicians who have a fair knowledge of chemistry shrink from making some of the simple tests for constituents of normal or pathologic urine. This condition may be brought about by a lack of practice accompanied by a want of confidence, or through a slight acquaintance with some of the larger works on the subject with their bewildering profusion of tests causing e. g. a test for albumen to assume the appearance of a scientific investigation. Yet any one with a fair knowledge of chemistry and of chemical analysis should be able with the aid of a guide to perform all of the tests commonly demanded for a proper diagnosis based on the constituents of urine.

The object of the little treatise, the second edition of which now lies before us, is to encourage phycisians, apothecaries and chemists to perform these tests without hesitancy. That the author has succeeded in persuading many to overcome their fear is evidenced by the early appearance of the second edition. The first edition appeared in July 1897, the second in February of this year. This speaks for itself. It is only so short time ago that this little work was reviewed in the columns of this journal, that a reference to the review (vol. 15, p. 231) for those who paid little or no attention to it at the time ought to be sufficient. *E. K.*

Pharmaceutical Review.

VOLUME 16. JULY, 1898. NUMBER 7.

Editorial.

It is reported that the Michigan Board of Pharmacy at its last meeting made a change in its rules. The Michigan law evidently requires three years of drug store experience as a qualification on the part of candidates who desire to be examined by the board for registration as "pharmacists." Heretofore the board interpreted that in counting these three years the time at college could be doubled, but required a drug store experience of four months additional. It thus established an apparent ratio of value between college training and drug store experience of about two to one. It is doubtful that this should have been the intention of the board. Most likely this arrangement was the easiest way out of a practical difficulty. Now the ruling is that the candidate must have a year's experience in a drug store and that he shall get credit for a year's work in college for every nine months spent there. Thus he will be eligible for examination by the board if he has spent eighteen months in college and has had a year's experience in a drug store.

This is, no doubt, an improvement over the former requirement and is to take effect January 1 of next year. To argue from this change that the Michigan Board of Pharmacy values college training less and drug store experience more than it did formerly, would almost unquestionably be wrong. Again this change most likely indicates a solution that suggested itself as the most expedient out

of a practical difficulty, viz. the simplest way of raising the standard of pharmaceutical registration in Michigan. It is certainly not to express the "relative worth of experience and college training."

It is unfortunate that boards give cause for the provocation of such comparisons. It may be an easier practical remedy than a change in the statute, yet such a change should be made as soon as practicable. College training should stand for itself and drug store experience also. The two are not comparable, they have no "relative worth." Each is indispensable to the reliable pharmaceutical practitioner and both should be demanded by boards of pharmacy. The law in Michigan ought to read: "Graduates of the University of Michigan and institutions giving like courses should have had a year's (or better two) experience in a drug store before presenting themselves for examination." This would do away with all attempts at comparison of things that are not comparable.

In the circular distributed by the Chairman of the Section on Education and Legislation of the American Pharmaceutical Association the paragraph headed "Two classes of establishments" reads as follows: "It is believed that taking the vast area, the varied character and density of population, of the different states, into consideration, in order to improve the status of pharmacy, it is necessary that there be a gradual separation of the practice of pharmacy from what is commonly called the drug business."

From the standpoint of the intuitional reformer this sounds very rational. Indeed it is not the first time that this proposition has been made to an American pharmaceutical audience as an ideal remedy for our present unpleasant condition. We should go back farther, however, and remember that this same remedy has been suggested years ago in other countries to correct evils similar to those which confront us. More than that, it has been tried in more than one European country and everywhere has been found wanting.

It seems strange indeed to see a statement such as the one quoted above incorporated into what is designed to develop into a model pharmacy law at a time when European countries after one or several generations of experience in dual pharmacy are strenuously endeavoring to cast aside this incubus. France has just succeeded in passing a law which disposes of one of its several classes of pharmacists. England is trying to raise the standard of the second class

up to that of the first. Germany and Austria have learned the bitter lesson that the establishment of a second class does not insure the professional standing of the first, but that it drags the first down to the level of the second, in other words tends toward commercialization.

The argument seems plausible indeed that rural classes should have the benefit of at least a second class pharmacist or druggist if they cannot maintain a first class pharmacy. This beneficent argument had much weight with European socialists, but what are the facts after a generation's experience? The second class druggists have shunned the rural districts for which they were largely intended and have concentrated in the more populous cities. Moreover, they have increased out of all proportion to the demand in the larger cities and have brought about a ruinous competition which not only affects themselves, but the first class pharmacists as well. They not only undersell him, but they sell contraband ware, i. e. sell medicaments to be dispensed upon physician's prescriptions only and even put up prescriptions in direct violation of the law. Attention was called to the fact not long ago in this journal that 85 percent of all the druggists (second class) of Berlin had been found guilty of trespassing the law.* In fact they have ceased to blush when caught in the act of violating the law; they have in open session announced that competition among themselves has become so keen that they cannot make a living without trespassing on the domain of their first class colleagues.

Yet the very same quasi-remedy, that has been tried and found wanting, is urged upon us. Are we blind, or have we really nothing to learn from the experiences of others? We are told that history teaches, but it would seem that we stand above the teachings of history and experience. There is no reason why we should become slavishly attached to any institution, European or otherwise, but on the other hand there is every reason why we should profit by the experiences of others, whether we consider them friendly or antagonistic to our own cherished institutions.

Word has been received that the fellowship in chemistry which the firm of Parke, Davis & Co. had sustained at the University of

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* See vol. 15, p. 105.

Michigan during the year 1895—6 has been renewed for the coming collegiate year 1898—9. The only condition placed upon the fellowship seems to be that the work have more or less direct bearing upon medical and pharmaceutical interests. The Regents of the University have placed the work of the fellowship in charge of a committee consisting of Professors Prescott, Vaughan and Freer. The annual stipend is $500.00 and it is sincerely to be hoped that the fellowship may be made a continuous one.

The University of Michigan has also been fortunate in having the fellowship from Messrs. Frederick Stearns & Co. of Detroit, which was established in 1895, maintained ever since. The income of this fellowship is three hundred and fifty dollars a year and its object is scientific research under the direction of the pharmaceutical faculty, by whom its appointments are made. This fellowship has been productive of some very interesting and valuable results as shown by several publications on the chemistry of kola.

In this connection it is exceedingly gratifying to be able to report that Mr. August Uihlein of Milwaukee, who for three years past has maintained a fellowship in pharmaceutical chemistry of the value of $400.00 per annum at the University of Wisconsin, has recently consented to renew his generous offer for the collegiate year 1898—9. Mr. Uihlein's name, though he is in no way financially connected with pharmacy, will nevertheless find a lasting place in the history of our calling, for he was the first to offer a university fellowship to a school of pharmacy and was instrumental in securing another. We are glad to know that others have followed the good example and hope that many more will step forward into the ranks of the beneficiaries of pharmaceutical education. Whereas almost every other branch of education, general or applied, has had its friends who have donated millions in the aggregate, pharmaceutical education has heretofore been a stepchild, both from the educational and the beneficiary standpoint. It is encouraging, therefore, to witness this exceedingly welcome progress in the matter of pharmaceutical fellowships during the past few years.

Credit should also be given to a small number of Wisconsin's druggists who for two years maintained a pharmaceutical fellowship at their state university. Though few if any of our pharmaceutical practitioners possess the means to support a fellowship individually, collectively they can accomplish very much. It is to be hoped that

the better times which are in prospect will induce the druggists not only of this, but also of other states to push at the wheel of pharmaceutical education, for, to use the motto of a late pharmacist of the old school, *in scientia est salutas*.

Whereas we may regret that a war tax of any sort has become a necessity, we should be willing to share our part of the burden. Furthermore we should as true American citizens be willing to have the tax levied in such a way that the people of this country may realize that they and no one else must pay for the liberation of the Cubans. Whatever our opinion before the war may have been, no other course remains for us at present. The paying of this tax is about the only way in which most of us are taught that war is something else than a jingo picnic.

Several large pharmaceutical manufacturers have generously announced their intention to continue the payment of wages of such of their employees as have enlisted for war. No doubt, they are willing also to stand their share of war taxation imposed by the government. The writer does not feel competent to state whether the bill which has passed is just in all of its details or not. He has, however, observed the growing tendency on the part of many to consider as unjust that which affects them. It is particularly noticeable at the present time that the secret medicine manufacturer is assuming the double role of the wronged one and the friend of the druggist. Thus e. g. a member of a Chicago firm writes to the Pharmaceutical Era that he has urged upon several senators the substitution of "a tax of 2 or 3 percent on the net sales of all manufacturers of woven and knitted fabrics of cotton, wool" etc. A very generous proposition indeed. His reasons are exceedingly wise and philanthropic: "Such a tax would not be a burden. The consumer of these goods would not see, feel, taste or smell the tax. The unfortunate sufferers from catarrh and hay fever would need Klinck's Catarrh Remedy, *the only cure for these afflictions*, (Italics the editors) and yet would not be expected to pay $1.04 for each bottle of this wonderful remedy." Whether the druggists of this country have good reasons or not to be dissatisfied with their share of the burden of a war tax, we hope sincerely that they have sufficient self-respect not to become the tools of such wolves in sheep's clothes.

Laboratory Notes in Pharmacognosy.

By *Rodney H. True.*

The purity of his stock is one of the most vital questions that can interest a pharmacist of conscience and the importance to the public of trustworthy drugs is self-evident. Accordingly, to give the studen's command of the simpler methods of testing crude drugs and to drill them in the application of these methods to commercial articles, various subjects are assigned each year as a part of the laboratory work in pharmacognosy to students in this branch. Some of the more interesting facts developed in this way as well as various *miscellanea* seeming worthy of brief notice are submitted in the form of these notes.

Saffron.

Mr. John Arendt, 1897, collected from various sources thirteen samples of Spanish saffron, seven directly from wholesale firms in the West and six from retailers of Wisconsin.

Examination showed several kinds of impurities or adulterations present with great regularity, and others more serious, occasionally.

In every sample a small quantity of styles was observed as slender, yellow, thread-like structures frequently branching at one extremity into three parts. They are perhaps to be regarded as impurities due to carelessness in picking and in no case did they form any large proportion of the drug. Several specimens containing approximately 10 percent were seen.

Anthers of the crocus appear occasionally as yellowish-brown, narrow bodies split open lengthwise along the edges. These were not observed in any considerable quantity.

Florets of *Calendula officinalis*, the marigold, were found in every specimen examined, but always in small amounts, usually from one to two percent, in but one case as high as 6.9 percent. It is difficult to see how these bodies foreign to the plant could find their way in an innocent manner into this drug, and probably they should be regarded as adulterations, significant, however, only when large quantities of saffron are concerned.

Among the occasional adulterations, the so-called "feminella" is found. This consists of florets of the marigold dyed red with red saunders or some other substance. When present, this is plainly put

in for a purpose and occurs in large proportions. Two specimens were seen which were adulterated with this article, containing 28 and 30 percent respectively.

A more frequent adulteration consists of filaments of vegetable origin heavily loaded with some inorganic substance. In the specimens examined, some calcium salt was used. The filament used to carry the mineral salt is very delicate in its structure and seems to be a part of some floral organ, perhaps. Its structure is different from that of the crocus styles sometimes used and some other plant is here made use of. This adulteration was found in four specimens and in considerable quantity each time, 21.5, 27.6, 38.9 and 44.6. percent respectively.

The ash of saffron thus adulterated was found to be greatly increased. Mr. H. F. Schwarz (1898) has determined the total ash of several specimens and found that whereas the normal ash is about 5 percent, in the case of the samples containing 21.5 and 27.6 percent of this adulteration, the ash amounted to 24.87 and 18.67 percent respectively.

Specimen.	Stigmas.	Calendula florets.	Styles.	Loaded filaments.	Feminella.	Ash.
1) Valencia.....	93.0 p.c.	1.0 p.c.	6.0 p.c.			
2) Alicante.....	90.0 "	1.6 "	8.4 "			
3) Spanish.....	88.7 "	1.3 "	10.0 "			
4) Spanish.....	92.4 "	0.8 "	6.8 "			
5) Spanish.....	48.3 "	1.5 "	11.2 "	38.9 p.c.		
6) Valencia.....	69.3 "	3.0 "	6.2 "	21.5 "		24.87 %
7) Alicante.....	40.0 "	2.4 "	trace	27.6 "	30.0 p.c.	18.67 "
8) Spanish.....	69.0 "	3.0 "	trace		28.0 "	
9) Spanish.....	50.2 "	1.6 "	3.6 p.c.	44.6 "		
10) Spanish.....	87.4 "	6.9 "	5.6 "			
11) Spanish.....	92.0 "	1.4 "	6.6 "			
12) Spanish.....	89.0 "	trace	10.9 "			
13) Spanish.....	81.0 "	1.3 p.c.	3.5 "	(sand) 14.1 p.c.		

One specimen of saffron was seen containing about 14 percent of red sand.

The above table shows the constitution of the samples examined. Nos. 1 to 7 were obtained from wholesale houses, Nos. 8 to 13 from retail dealers of Wisconsin.

The study of commercial samples of saffron is being continued.

Lycopodium.

Mr. A. L. Reichert (1897) examined a number of commercial samples of lycopodium powder and found that impurities are frequently present. One of those most regularly seen is fragments of the sporangium wall broken off in obtaining the spores. These were not found in any considerable quantity. Pine pollen was seen in one specimen making up approximately 20 percent of the powder. Potato starch was found in two specimens. In one case, it constituted about 30 percent of the powder, in the other a somewhat less proportion. Of the specimens examined, a large majority were found to be practically free from adulteration.

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Fragmentary Notes from the Reports of Two Early Naturalists on North America.

By *Fred. Hoffmann.*

To the student of the history of culture as well as of the natural products and of the botany of the North American Continent the descriptive reports of early travellers are of special interest. Among these, two naturalists who visited the eastern and southern Atlantic States, the one during the colonial period, the other shortly after the attainment of independence, stand foremost by their scholarly attainments, correct and clo e observation and accurate description of the botanical, zoological and topographical conditions of the new country. They are Prof. Peter Kalm of Aabo in Sweden, and Dr. Johann David Schöpf of Baireuth, court physician to the Margrave of Brandenburg. The former visited the British colonies from Virginia to Canada in 1748 to 1749, the latter came to America as surgeon of Hessian troops during the war of independence and

after the cessation of hostilities visited the then accessible parts of the Atlantic states from New York to Florida during the years 1783 and 1784.

Both men after their return compiled from their notes and records comprehensive descriptions of their travels and reported the observations made in the new world. Kalm, a contemporary of and student with Linné, was familiar with the labors and writings of this great organizer of the accumulated knowledge of the plant-world and was himself a good botanist and a close and accurate observer and writer. His descriptive reports are as comprehensive and precise as they are plain and lucid. His comprehension of and interest in the natural conditions as well as in the economic, religious and educational affairs of the colonial provinces are manifest on every page of his reports and writings. He had the good fortune to find a well informed and liberal adviser in John Bartram, one of the earlier self-made botanists of North America, who lived in Philadelphia and whose acquaintance he made soon after his arrival in America. Bartram assisted Kalm with much information about the flora of Pennsylvania and the adjoining states.*

Prof. Kalm made this voyage as a scientist and naturalist and at the expense of the Royal Academy of Sciences of Sweden, whose member he was. He started from Upsala for England October 16, 1747, and remained in England nine months. On the 5th of August, 1748, he found the first opportunity to sail for Philadelphia, where he arrived on the 15th of September. His letters of introduction to Benjamin Franklin and other well known men, as well as his connection with his countrymen and particularly with the Swedish and German clergymen in Pennsylvania and the provinces, secured for Prof. Kalm good opportunities for thorough information and observation in every direction, among which his acquaintance with John Bartram was the most advantageous one. He passed the winter months of 1748 to 1749 in Philadelphia, then the intellectual and commercial centre of the British colonies. In 1749, Kalm made extensive trips through the countries around Philadelphia and through the more readily accessible parts of Pennsylvania, New Jersey, Delaware and New York. From Albany he ventured into the domain then largely inhabited by hostile Indian tribes along the Mohawk

* A brief description of Bartram's life and labors and of his home near Philadelphia may be found in Appletons' Popular Science Monthly, April 1872, and in Pharmaceutische Rundschau, Vol. 10 (1892), p. 94.

valley and, upon a dangerous voyage, through the mountainous wilderness around the lakes of St. Sacramento (Lake George) and of Champlain and reached the St. Lawrence at Montreal. From here he made trips to Trois Riviers, to Quebec and the Bay of St. Paul. Among the French inhabitants in Canada he met with a very friendly welcome and, among others, enjoyed in Quebec the instructive assistance and, on his excursions into the surrounding country, the companionship of the physician and naturalist Dr. Gaulthier, in whose honor Dr. Kalm subsequently named *Gaultheria procumbens.*

In December 1749, Dr. Kalm returned to Philadelphia. During the year 1750 he made extensive trips through western Pennsylvania, the coast districts of New Jersey, through the state of New York along the western shore of the Hudson river, through the Catskill mountains to Albany. From there he again exposed himself to considerable dangers by entering the dreaded wilds inhabited by the Iroquois and other hostile Indian tribes. He reached Lake Ontario and went as far as Niagara Falls, whence he returned through the "Blue Mountains" (Alleghanies) to Philadelphia. On February 15, 1751, Dr. Kalm embarked at New Castle on the Delaware and reached London March 20.

After his return to his quiet home in Sweden, Prof. Kalm published several papers on the Flora of North America; his large collections of plants, seeds and minerals became the property of the Royal Academy of Sciences. The specimens of plants served for the determination of a number of genera und species. One genus of the family *Ericaceæ* was named by Linné in honor of Dr. Kalm *Kalmia.* In time Kalm elaborated a comprehensive report of his travels and observations, which was published in the Swedish language by the Swedish Academy of Sciences from 1753 to 1763. This work was translated into German by the brothers Murray in Göttingen and was published in three volumes in the "Göttingsche Sammlung neuer und merkwürdiger Reisen zu Wasser und zu Lande" in the years 1754, 1757 and 1764.

In perusing Prof. Kalm's writings, many statements are found which are of interest in the natural history of the eastern states of the United States. Quite often the trees, plants and weeds prevailing in the various localities are enumerated, among them such as were used as domestic remedies, as for instance: *Liriodendron, Magnolia, Acer, Juglans, Carya, Cephalanthum, Robinia, Cornus florida, Prunus*

virginiana, *Sassafras*, *Liquidambar*, *Betula lenta*, *Gleditchia*, *Hamamelis*, *Fraxinus*, *Cypressus*, *Myrica cerifera*, *Collinsonia*, *Hedeoma*, *Epigæa repens*, *Podophyllum*, *Gabium tinctorium*, *Adiantum capillus-veneris*, *Arbutus uva ursi*, *Myrica gale*, etc.

Datura and *Phytolacca* are mentioned among the most persistent weeds.

Of a number of trees, among them sassafras, Kalm states that they are large and high in Pennsylvania and adjoining states and become slender farther north (vol. 2, p. 287) towards the shores of the Lake Ontario, while he found the sugar-maple in its greatest development in Canada.

At the time of Prof. Kalm's visit several plants were of special commercial value and much in demand, among them particularly ginseng root which grew in abundance in the woods along the St. Lawrence river from Montreal to Quebec (vol. 3, p. 407). The French settlers had sent specimens of the root to France, where the approximate identity of the root with Chinese ginseng was noticed. In consequence Canadian ginseng became an important article of exportation from Quebec to France, whence it was exported with great profit to China. Kalm states that during his stay in Canada in the summer of 1749 the demand for the root was so brisk that the gatherers of the root, the Indians, devoted all their attention and time to this work so that they could not any more be hired for field work, as usual, by the French farmers. Kalm adds that apprehension was felt of the speedy exhaustion of ginseng in Canada and the adjoining British provinces southward.

As another article of export to France and England Kalm mentions (vol. 3, p. 412) maiden hair (*Adiantum capillus veneris*), used as a much trusted remedy in diseases of the throat and lungs.

A number of herbs, barks and roots are mentioned which then had quite a reputation as efficient domestic remedies used by the medicine men and women of the Indians as well as by the early settlers of the land. It may be of special interest to add that the barks of *Liriodendron* and of *Cornus florida* are mentioned (vol. 2, p. 516) as approved remedies in chills and fevers, and as being in many cases superior to cinchona bark.

Safran (*Crocus sativus* L.) was cultivated in the neighborhood of Philadelphia, of Lancaster and of Salem, N. J., but was said to be inferior to the article imported from England and France.

The sweet gum-tree (*Liquidambar styraciflua* L.) was found growing abundantly in Pennsylvania, Delaware, New Jersey and New York, and John Bartram informed Prof. Kalm that this tree was indigenous to the Carolinas, where it yielded much more sweet gum than in northern districts. (Vol. 3, p. 130.)

Among the plants used for making domestic beverages, Kalm enumerates sassafras (vol. 3, pp. 193, 205, 355), while wintergreen is nowwhere mentioned in his writings, except "Wintergreen with the small leaves of Alsine from the Catskill mountains" (*Trientalis americana* Pursh. Chickweed-wintergreen.). *Betula lenta* L. is also mentioned among the trees of the states, but the aromatic properties of its bark seem to have not yet been observed by botanists (vol. 2. p. 220). As common beverages are mentioned apple cider, birch and fir beer, wine made from wild grapes, from cherries, currants, raspberries and black berries, and brandy made from peaches.

The fruits of the wax myrtle (*Myrica cerifera* L.) were used for obtaining a kind of plant wax by immersing them into boiling water. This bayberry was used for making candlesticks. It was dearer than common tallow but cheaper than bee's wax. The candles had the advantage of withstanding the summer heat better than the tallow candles. The catholic clergy, however, refused their use in churches (vol. 2, pp. 336 and 502). The bark of the sassafras tree was commonly used for dying wool yellow (vol. 2. p. 291).

As Kalm's trips did not reach the southern states, he did not become familiar with the turpentine industry of the Carolinas and obtained his information about making "tar and pitch" from John Bartram (vol. 2, pp. 418 and 474; vol. 3, pp. 305 and 523); but later on he passed some pitch kilns at the bay of St. Paul in Canada (vol. 3, p. 523), where the tar and pitch were obtained from the resinous roots of pines. Kalm adds that they seemed not to understand the gathering of resin by cutting the bark of the pine trees as was done further south. He also refers incidentally to the gradual destruction of the southern pine forests by fires.

The distillation of American essential oils like oil of turpentine, of sassafras, of wintergreen, of pennyroyal, etc., is nowhere mentioned by Kalm; he only once (vol. 2, p. 556) speaks of spirits of turpentine.

Prof. Kalm's observations on the birds and wild animals and on minerals are not less comprehensive and accurate than those on plants. He mentions among the common articles of food clams and

oysters (vol. 2, p. 384) and speaks of an abundance of birds and of reptiles in the forests and of muskitos everywhere, but adds that birds are said constantly and rapidly to decrease (vol. 2, p. 428 and vol. 3, p. 93 . Bears were so common in Virginia that the settlers could not raise pigs and that bears' meat was in common use in preference to pork.

Kalm noticed iron ores in many places (vol. 2, p. 440), but mentions the evident want of industrial enterprise and of factories. All textile goods were still imported from England. He states that no coals have been found in Pennsylvania, but are said to be found in the lands of the wild Indians in the west, but that they were mined further north at Cape Breton (vol. 2, p. 235).

Of some interest is also the correct explanation given by John Bartram of the origin of the circular or oval half-globular basins (pools) found in the rocks at the bottom of many ravines in American mountains, as for instance in the White mountains, throughout the Alleghanys, in the Adirondack, Ausable Chasm, Trenton Falls, Watkins glen, above the Montmorency falls near Quebec, etc. The story went that these "giant pots," as they were called, had been hollowed out by the Indians after the waters had subsided for storing food and hiding valuables during war times. Bartram gave to Prof. Kalm a better explanation of their origin: The ice rushing down with the torrents of water in spring frequently carries along encased pieces of rocks and larger pebbles and stones which gradually loosed from the melting ice and are dropped into crevices and holes at the bottom of the ravines. By the whirling waters these stones were kept in constant rotating motion, whereby in the course of time they had hollowed out and polished semi-globular basins in the hardest granite. These holes have frequently come to be on dry ground, in consequence of the drying up of the streams resulting from the deforestation of the surrounding mountains.

Prof. Kalm adds that this explanation corresponds with the one given by him in a communication to the Swedish Royal Academy in 1743 (vol. 3, p. 265).

Bartram also communicated to Kalm his idea about an original submersion of the North American continent under the level of the sea in prehistoric ages, mentioning in evidence the many shells and other remnants of oceanic life (vol. 3, pp. 278—281).

(To be continued.)

Laboratory Notes.

By *Ferd. A. Sieker.*

Soft Soap.*

Since the last communication on this article some more samples of soft soap were examined. Of these, the samples described as III and IV were no doubt manufactured in Germany and the others were domestic soaps.

Sample III. This was a soap of good appearance and free from stringiness, but contained white opaque particles which disappeared on warming it to about 20 to 25° C. On remaining exposed to the atmosphere it lost water and became quite thin. The percentage of fatty acids was not determined. The color of the fatty acids was yellow and the odor reminded one of linseed oil. The fatty acid was transparent at 25° C. at which temperature the specific gravity was 0.9059. At 15 to 20° C. is was partly solidified. The melting and congealing point was not determined. The iodin figure of the fatty acid was found to be 184.4 and 183.1 (2 estimations). The soap contained less than ¼ of 1 p. c. of free caustic potash, but contained considerable carbonate. The total excessive alkali ($KOH+K_2CO_3$) was equivalent to 1.9 p. c. of KOH. This was no doubt a pure linseed oil soap. It may be mentioned in the connection that the fatty acid from a sample of soap prepared by the writer from American linseed oil gave an iodin figure of 183.9 and possessed the sp. gravity 0.913 at 15° C. In determining the iodin value of the fatty acids from these soaps at least two times as much iodin-mercuric chlorid solution was used as is stated in the Pharmaceutical Review 1897, p. 112. The writer failed to state this in his former paper on this subject. If less iodin-mercuric chlorid solution is used, the iodin figures obtained run too low as has already been shown by other investigators.

Sample IV. This soap was transparent and entirely free from opaque particles even when exposed to a temperature of about 10° C. It was much darker than sample III and almost as dark as sample I, described in the January edition of the Review. It was free from stringiness. The color of the fatty acids was amber and the odor suggested linseed oil. The specific gravity of the fatty acid was

* Pharm. Review, 1898, p. 15.

0.9226 at 25° C. The melting and congealing point was not determined although it was observed that it became turbid when exposed to slightly below 25° C. The iodin figure of the fatty acids was 168.3. The high specific gravity and the low iodin value suggested the presence of resin, but no other tests were applied to substantiate this. The soap contained about ¼ of 1 p. c. of potassium hydroxid and an amount of carbonate equivalent to about 2.78 p. c. of KOH.

Domestic Soaps. As a duty of 15 cents per pound is now collected on all imported soft soap, a number of American soap makers have offered this article. Three samples were examined, all of which were prepared by the same soap maker. Two of these samples were excessively alkaline, but the third contained only about ¼ of 1 p. c. of KOH. These soaps contained very little carbonate. One sample contained 51 p. c. and another 27.8 p. c. of fatty acids insoluble in water. One sample was offered as a soap prepared from equal parts of linseed and cottonseed oils. The iodin value of its fatty acids was found to be 145.8 which corroborated this statement (185+110=295÷2=147.5). None of these samples were transparent and in appearance were not equal to the imported article.

Castile Soap. *

Two more samples of this article were also examined.

Sample IV. This was imported from Italy. The soap was fresh when examined and contained only 61.5 p. c. of insoluble fatty acids. 1 grm. of soap dissolved in 10 cc. of warm alcohol and cooled to 50° C. did not give a red coloration on the addition of phenolphtalein. No normal acid was necessary. This soap was therefore practically free from caustic alkali. On adding 20 cc. more of alcohol and some $\frac{N}{10}$ acid and heating to expel CO_2 (if any) it requires almost as much $\frac{N}{10}$ KOH as was used of $\frac{N}{10}$ acid, which proved that it was practically free from sodium carbonate and hydroxid. The alcoholic solution was only slightly turbid. It was afterwards observed that 30 cc. of the alcohol employed required 0.25 to 0.3 cc. of $\frac{N}{10}$ KOH and therefore the soap was actually slightly alkaline. It was nevertheless a remarkably neutral soap and exceptionally free from impurities insoluble in water and alcohol. The iodin figure of fatty acid was found to be 76.8 and 76.3 (2 estimations). This soap yielded an good lather.

* Pharmaceutical Review, 1898, p. 94.

Sample V. This sample was prepared by a N. Y. soap manufacturer, who claimed that it is a pure olive oil soap.

The iodin figure of the fatty acid was 71.18 and 69.82 (2 estimations). The soap was not further examined.

The iodin figure of a sample of olive oil examined at the same time was found to be 82.55 and 80.96 (2 estimations) which is about normal. Laboratory of Lehn and Fink, New York.

MONTHLY REVIEW.

Chemistry.

Acidity of Urine. — P. A. Lamanna considers the acidity of the urine as a means to ascertain the acidity, hypoacidity or hyperacidity of the juices of the body. The acidity of the urine is ascertained by supersaturation with $\frac{1}{100}$N.—KOH and back titration using phenolphthaleine as indicator. The normal urine of 24 hrs. contains acid:

Calculated as	H_3PO_4	g. 1	—1.2 p. c.
" "	HCl	g. 1.1	—1.35 " "
" "	$C_2H_2O_4$	g. 1.9	—2.33 " "
" "	H_2SO_4	g. 1.47	—1.81 " "

[Chem. Centrbl. 69, I p. 793; from Boll. Chim. Farm. 37, p. 129] *E. K.*

Strophanthin and Strophanthidin. — Feist calls attention to the different drugs sold under the name of strophanthus and to the different strophanthins. He is also of the opinion that the strophanthin of Arnaud* is different from that used by Fraser† and by himself.

It was heretofore supposed that strophanthin upon hydrolysis yielded a sugar‡ besides strophanthidin (comp. contradiction on part of Kohn & Kulish p. —). Feist has examined the water soluble compound more carefully than it has been examined before and comes to the conclusion that it may be a methyl derivative of a sugar containing less oxygen than saccharose. Strophanthidin upon oxydation yields benzoic acid and is, therefore, pronounced a benzene derivative. It is possibly an anhydride of the compound $C_{13}H_{20}O_4$. Inasmuch as the author expects to be able to produce more satisfactory results in a not distant future, it seems useless to discuss the details of this preliminary report. [Berichte, 31, p. 534.] *E. K.*

* Comptes rendus, 197, pp. 181 and 1162.)
† Pharm. Journ., 16, p. 109; 18, pp. 6 & 69; 20, p. 328.
‡ Fraser, Hardy and Gallois, Elborne and others.

Caffeïne Sodium Benzoate.—F. Rolla has observed that when solutions of sodium benzoate and coffeïne are mixed, coffeïne sodium benzoate is sometimes precipitated upon cooling. This is especially objectionable if the solution is to be used hypodermatically. This precipitate is always formed when the sodium benzoate contained soda as impurity. The author, therefore, suggests either to purify the sodium benzoate or to add a few centigrams of benzoic acid.

[Chem. Centr.-Bl., 69, I, p. 678; from Boll. Chim. Farm., 37, p. 100.] *E. K.*

The Determination of Small Quantities of Alcohol.—Desiring to estimate small quantities of ethyl alcohol and finding none of the published methods of the desired accuracy. Francis G. Benedict and R. S. Norris have worked out a process which gives fairly close results when solutions contain as low as 0.01% of alcohol. The method adopted depends on the oxidation of the alcohol by an excess of chromic acid in concentrated sulphuric acid solution, and the determination of the excess of chromic acid by titration against ferrous ammonium sulphate solution, the end point being established by a few drops of standard permanganate solution. The authors have very carefully worked out the conditions under which quantitive results are obtained and give explicit directions for the preparation of standard solution and the details of the method which can not well be abstracted. [J. Am. Chem. Soc., 20, p. 293.] *W. A. P.*

The Detection of Diabetic Sugar.—L. E. Sayre reviews Gerrard's Cyanocupric process for the estimation of sugar in urine and expresses the belief that the process (Year Book of Pharm. 1892, p. 400), as improved by Gerrard and A. H. Allen, will probably supercede all other forms of copper determinations of glycosuric urine. Gerrard's process is based on the following facts: When a solution of potassium cyanide is added to a solution of copper sulphate a colorless stable double cyanide of copper and potassium is formed, thus: $CuSO_4+4KCN=Cu(CN)_2,2KCN+K_2SO_4$. If potassium cyanide is added to Fehling's solution the latter is decolorized, the above salt being formed at the same time, and if this colorless solution is now boiled with glucose no precipitation of cuprous oxide takes place. If there be present excess of Fehling's solution, over the amount capable of being decolorized by the potassium cyanide, the solution is blue and when boiled with glucose or other reducing agents this extra portion of copper is reduced, but no cuprous oxide is precipitated, the progress of the reaction is indicated by a gradual diminution of color, the "end point" being reached when the solution is colorless. The titration is carried out as follows: Ten cc. of Fehlings solution are diluted with 40 cc. of water and the liquid heated to boiling. A five per cent solution of potassium cyanide is gradually added until the solution is nearly colorless. Then very cautiously, drop by drop, while the liquid is still boiling, the cyanide is added until the blue

color just disappears. Now 10 cc. of Fehling's solution are added and the test is ready. The urine or saccharine solution is now added in the same way as when using Fehlings method the end point being indicated by the complete disappearance of the blue color, which is easily seen as no copper suboxide is thrown out. As only the second measure of Fehlings solution suffers reduction the calculation is based upon the copper value of 10 cc. of the solution.

In the hands of a class in urine analysis this method compared favorably with Fehling's volumetric method.

[Druggists Circular, 1898, p. 100.] *W. A. P.*

Solubility of Bromine and Iodide in Water. F. Dietze has re-determined the solubility of bromine and of iodine in water and finds that while the solubility of bromine given in the Germ. Pharm. (also in U. S. P. *W. A. P.*) i. e. 1 in 30 is correct, the solubility given there (also U. S. P. *W. A. P.*) for iodine in incorrect. Instead of a solubility of 1:5000 the author finds that water saturated with iodine at 15° C. will contain iodine in the proportion of 1:3700, while, when hot water is saturated with iodine and then cooled to 15° C., it will contain iodine in the proportion of 1:3500.

[Pharm. Ztg. 43, p. 290.] *W. A. P.*

Examination of Commercial Samples of Amyl Nitrite and Spirits of Nitrous Ether, and a New Method for their valuation, Carl E. Smith writes: "Many pharmacists might possibly be pursuaded to test their supplies of amyl nitrite and spirits of nitrous ether, if they were not deterred by a seeming, though not real, complexity of the present U. S. P. method of assay, and by the necessity of either purchasing a special apparatus, a nitrometer, or else taking the trouble of improvising one from other apparatus at hand. Hence, the control of the strength of these preparations, under present conditions, is restricted almost entirely to manufacturing and analytical laboratories. It is a desideratum, therefore, for the pharmacist to be in possession of a method of valuation that does not require special apparatus and, in other respects, is adapted to the requirements of the dispensing pharmacist. The writer has studied the various methods proposed for the estimation of nitrites from time to time and has succeeded in adapting a new method, very recently proposed for alkali nitrites, to the estimation of amyl and ethyl nitrite. The method, proposed by B. Grützner (Rev. fals., 1898, 21. Abs. Ztsch. angew. Chem. 1898, 307) for the estimation of nitrites, is based upon the following reaction: $3HNO_2 + HClO_3 = 3HNO_3 + HCl$. The hydrogen chloride formed is estimated by means of silver nitrate, and from the weight of silver chloride found the amount of nitrite calculated. A series of experiments led to the adoption of the following details:

Valuation of Spirits of Nitrous Ether. Into a 100 cc. flask or bottle of white glass, provided with a loosely fitting stopper of rubber, glass or cork,

place successively 10 cc. of distilled water, 5 cc. of cold, aqueous, saturated solution of potassium chlorate, 5 cc. of the spirit to be tested and 5 cc. of 10 percent nitric acid. Quickly insert the stopper and shake frequently during 30 minutes. Then add 10 cc. of N/10 silver nitrate, shake briskly for a moment, add 10 drops of ammonium ferric sulphate solution, and titrate the excess of silver with N/10 potassium sulphocyanate solution. The titration should be performed without delay to avoid darkening of the precipitated silver chloride by the influence of light, which interferes with the end reaction. The end point is reached when, after momentary shaking, upon addition of the last drop of solution, the appearing red color is not entirely dispersed, but leaves the liquid faintly reddish throughout. The color will frequently disappear upon persistent shaking or after standing a while, but no attention need be paid to this. Each cc. of N/10 silver nitrate consumed in precipitating the chloride formed corresponds to 0.0225 gm. ethyl nitrite.

Valuation of Amyl Nitrite. Partially fill a 100 cc. graduated flask with alcohol, insert the stopper and weigh. Add 5—6 gm. of the amyl nitrite to be tested and weigh again. Fill the flask to the 100 cc. mark with alcohol and mix thoroughly by shaking. Then proceed in the same manner as directed for spirits of nitrous ether, using 20 cc. of distilled water, 10 cc. of saturated solution of potassium chlorate, 10 cc. of the alcoholic dilution of amyl nitrite and 10 cc. of dilute nitric acid. Also use 20 cc. N/10 silver nitrate; titrate the excess as directed before. One cc. of N/10 silver nitrate corresponds to 0.0351 gm. amyl nitrite.

Examination of commercial sample of spirits of nitrous ether and concentrated ether (one sample) demonstrates that all fairly agree with the claimed standard and that the author's method gives somewhat higher results.

Of the five samples of amyl nitrite four are fairly well in accord with pharmacopoeial requirements, one contained only about 20 percent. of amyl nitrite. Here, too, the new method gave higher results. (A. J. Phar., 1898, 273.) *W. A. P.*

Botany and Pharmacognosy.

Alinit.—Under this name the Farbenfabriken vorm. Friedr. Bayer & Co. have introduced into the market a fertilizer for grains. According to the manufacturer the *Bacterium Ellenbachii a* is said to be the active constituent of the fertilizer. Stoklaser, however, claims that the organism in question is identical with *B. megatherium*, as demonstrated by pure cultures of both. Alinit, therefore, consists of the spore bearing cultures of *B. megatherium* de Bary evaporated to dryness with some indifferent constituant.

[Chem. Centr.-Bl., 69, I, p. 789; from Centr.-Bl. f. Bakter. etc. II, 4, pp. 39, 78, 119.] *E. K.*

Areca Catechu L. — J. U. Lloyd gives a succinct account of Areca Catechu L. He considers (1) botanical description, cultivation and historical notes; (2) medical use and notes on the betel habit; (3) chemical constituents of areca nut; (4) pharmacopœial record; (5) literature on areca catechu. A handsome illustration with dissections of flower and fruit accompany the article. [Western Drug., 1898, p. 195.] *H. K.*

Botanical Nomenclature. — J. U. Lloyd publicly advocates the use of the common names of certain plants. The following are mentioned:

Asthma Weed, for Euphorbia pilulifera (to distinguish it from other species of Euphorbia).

Black Haw, for Viburnum prunifolium (to distinguish it from Viburnum opulus).

Fragrant Sumach, for Rhus aromatica (to distinguish it from Rhus Toxicodendron).

Gravel Root, for Eupatorium purpureum (to distinguish it from Eupatorium perfoliatum).

Horse Chestnut, for Æsculus Hipposcastaneum (to distinguish it from Æsculus glabra).

Spikenard, for Aralia racemosa (to distinguish it from Aralia nudicaulis).

Spotted Spurge, for Euphorbia hypericifolia (to distinguish it from Euphorbia corollata and Euphorbia pilulifera).

Swamp Milkweed, for Asclepias incarnata (to distinguish it from Asclepias cornuti and Asclepias tuberosa).

White Snake root, for Eupatorium aromaticum (to disinguish it from Eupatorium perfoliatum and Eupatorium purpureum).

[Amer. Jour. Pharm., 1898, p. 234.] *H. K.*

Mucilage in Plants. — In an article on the origin and detection of mucilage in plants, Henry Kraemer gives a method for the use of methylene blue as a reagent which seems to have certain advantages in the application to dry as well as fresh plant material. With fresh plant material the author proceeds as follows: The specimen is placed in an alcoholic solution of methylene blue of the following strength: Methylene blue, 0.400 grammes; alcohol (95 per cent.) 100. cc.

The specimen is left in this solution for at least several hours, after which sections may be made and are transferred to a slide having a few drops of glycerin methylene blue solution: Methylene blue, 0.400 grammes; alcohol (95 per cent.) 20. cc.; glycerin (nearly anhydrous), 80. cc.

The cover-glass is put upon the section, and in a short time the mucilage cells are stained blue and are readily distinguished from the remaining unstained cells. Preparations so prepared may be kept indefinitely. In fact in a few weeks the contrast is even more marked than on the first day.

With drug or herbarium material the method only differs in the preli-

minary treatment of the specimen. The material is first softened by treatment with water at the ordinary temperature and then put into alcohol and then alcoholic methylene blue solution and so on as outlined above for fresh specimens. [Amer. Jour. Pharm., 1898, p. 285.] *H. K.*

Larrea Mexicana. — C. B. Lowe writes regarding this drug, that an excellent ointment might be prepared by incorporating a definite amount of the resin with lard or by digesting upon a water-bath the leaves of the plant with lard. It is possible also that when used internally it will prove a stimulating expectorant analogous to eriodictyon. The following is a summary of an analysis made by Wm. E. Krewson, Jr.:
Moisture, 7 per cent.; ash, 7.45 per cent.

Extracted by petroleum ether, 1.87 per cent. { soluble in water. 28.18 p. c.; caoutchouc, .43 per cent.; fixed oil and fat. .93 per cent.

" " stronger ether, 17.27 per cent. { resins and vegetable acids.

" " alcohol, 7.30 per cent. { resins, chlorophyll and vegetable acids.

" " water, 11.71 per cent. { mucilage, 1.92 p.c.; dextrin, 4.33 p.c.: glucose, .31 p. c.: sucrose, .12 p. c.

" " alkaline water, 6.24 per cent. { albuminous and mucilaginous matters, .13 per cent.

" " acidulated water. 3.17 per cent. (pararabin, 1.59 per cent.)
Starch, 3.21 per cent. [Amer. Jour. Pharm., 1898, p. 236.] *H. K.*

New Volatile Oils. — We are again indebted to Prof. Treub. Director of the Botanical Garden at Buitenzorg for two specimens of new essential oils. They have been distilled by Dr. van Romburgh in the agricultural laboratory of the Botanical Institute, who has added the following information in regard to these specimens: —

1. Spec. Oil of the fresh herp of *Ageratum conyzoïdes*, a plant of the family of the Compositae, growing in Java. The oil has the spec. grav. of 1.015 at 27.5°; it turns polarized light by 5.5° to the left in a tube of 200 mm. length, and boils at about 260°. It therefore seems to contain a compound of the sesquiterpene series.

2. Spec. Oil of the fresh leaves of *Caesalpinia Sappan* L., the Sappan tree furnishing Sapan wood. The leaves contain 0.16 to 0.2 per cent of an almost colorless essential oil, which has the spec. grav. of 0.825 at 20°. It is strongly dextrogyrate, ranging from 75° to 100.5° in a tube of 200 mm. length, and boils mostly at 170°. Its odor is pepper-like, recalling phellandrene. With the aid of the well known test for this hydrocarbon, phellandrene nitrite was separated; dextrogyrate-phellandrene, therefore, seems to be the principal constituent of this oil.

During the process of distillation of both of these leaves, Dr. van Romburgh observed the formation of methylalcohol.

[Schimmel & Co's. Bericht, April '98.] *E. K.*

Strophanthin. — The lack of positive information as well as the contradictions regarding this substance have likewise induced Kohn and Kulisch (comp. Thoms, pp. 144 & 193) to examine this new drug. After extraction of the seeds with petroleum ether they were dried and then exhausted with 70 p. c. alcohol. The filtered alcoholic extracts were precipitated with basic lead acetate and lead oxide, the filtrate deprived of its excess of lead with sulphuretted hydrogen and evaporated in vacuo. After standing several days comparatively pure crystals of strophanthin separated. The yield from Kombé and hispidus seeds was 0.3 to 0.5 p. c. Hardy had obtained 0.7 p. c. After recrystallization from water, the product was perfectly free from nitrogen. Basing their conclusions on the ultimate analysis of this compound as well as that of a commercial specimen of Merck, also on a methoxy determination (found 5 p. c. OCH_3=1OCH_3 pro $C_{31}H_{48}O_{12}$), they accept Amand's formula, $C_{31}H_{48}O_{12}$ and reject that of Frazer. They also question the glucosidal nature of strophantin, because after hydrolysis they could obtain no characteristic reaction for sugar. The water soluble compounds after hydrolysis reduced Fehlings solution but yielded no osazone, nor did it ferment. They expect to make a more detailed report with regard to the decomposition products of strophanthin, also as to the composition of strophanthidin in the near future.

[Berichte, 31, p. 514.] *E. K.*

New Remedies.

Eigon. — Under this name Dieterich has placed upon the market three new iodine-albumen compounds.

1. *α*-Eigon (iodo-albumen), a light-brown powder, odorless and tasteless, insoluble in water and containing 20 per cent of iodine, which can be split off by alkalies or by acids.

2. *α*-Eigon-sodium (sodium iodoalbuminate) an almost white powder, odorless and tasteless, soluble in water, and containing 15 per cent of combined iodine.

3. *β*-Eigon (iodo peptone), containing 15 per cent of iodine and having the same general properties as the preceeding compound. It is given whenever large quantities of iodine are to be rapidly absorbed, especially in case of weak digestive functions, since the iodine is in what might be called a predigested condition.

All three preparations will keep unchanged indefinitely. They are recommended to be used externally in the form of ointments, dusting powders, suppositories, etc.; for internal use with extract of malt, in pill-form, tablets, or dissolved in syrups, wines or other vehicles.

[Ph. Post, 1898, p. 131.] *R. F.*

Some New Quinine Salts. — Quinine glycerophosphate ($C_3H_7O_3PO_3$: $[C_{20}H_{24}N_2O_2]_2$) is a white powder, soluble in hot water and in alcohol, containing 68 per cent of quinine. The neutral salt is hygroscopic and is therefore generally replaced by the permanent basic salt. Both are employed as tonics.

Quinine phospho-muriate forms colorless crystals, soluble in 2 p. of water and containing 50 per cent of alkaloid. It is recommended in obstinate cases of malaria and nervous headaches, as a substitute for quinine sulphate, but on account of its lower alkaloidal strength must be given in larger doses. [Pharm. Post, 1898, p. 131.] *R. F.*

Cocaine Hydriodate. — This cocaine salt ($C_{17}H_{21}NO_4HI$) is recommended as a substitute for cocaine hydrochlorate in dental surgery for accomplishing electro-anaesthesia (kataphoresis). This comparatively recent therapy consists in introducing local anaesthetics into the tissues by means of the electric current, without injury to the tissues. Kataphoresis obtained with guaiacol-cocaine in 20 per cent solution and the application of a current of 0.2—4. milli-ampères for seven minutes caused complete anaesthesia lasting for 15 minutes. The patients remain perfectly conscious and do not feel the current nor the slightest pain during the operation (extraction of a tooth etc.) [Ph. Post, 1898, p. 131.] *R. F.*

Opotherapeutic Preparations.—In last years report (Vol. 15, p. 144) the general principles governing the preparation of opotherapeutic remedies as undertaken by E. Merck in conjunction with Prof. Poehl of St. Petersburg were explained. The fact, that, in the short period which has elapsed since the practical introduction of the opo-preparations, a whole series of successful applications have already been recorded, seems to indicate that the measures adopted to ensure a rational mode of preparation, serve the intended purpose satisfactorily. [Vide M. Affanasief, Modern. Medicin and Hygiene (Russian), vol. 1896, and Journ. of Med., Chem. and Pharm. (Russian) 1896, No. 12, p. 504; R. Serapin, Wratsch (Russian) 1896, No. 41, Journ. of Med., Chem. and Pharm. (Russian) 1896, No. 14, p. 625; F. Fedoroff, Journ. of Med., Chem. and Pharm. (Russian) 1896, No. 20 and others.]

The originally selected rate of concentration, viz. 1 part of the preparation = 10 parts of the fresh tissue substance, has proved inconvenient in dosing. The rate of concentration of the opo-preparations as now supplied is such that 1 part by weight of these remedies is equivalent to 5 parts of fresh tissue substance. The subjoined table has been compiled with a view to show the application and dosing of the opotherapeutic remedies as far as now available. It should, however, be born in mind that the indications specified therein have merely been derived from previous application of the corresponding organic preparations. Similarly, the dosing has been theoretically calculated from the known dosing of organic preparations.

Name and origin of the preparation.	Indications.	Doses for adults in grammes.
Opocerebrinum from the grey brain matter.	Chorea, hysteria neurasthenia, agrypnia, chron. alcoholism, anaemia, chlorosis with pronounced cerebral symptoms, epilepsy, brachycardia.	0.2—0.4 (gr. 3—6) per dose, 0.4—0.8 (gr. 6—12) per day.
Opohypophysinum from the pituitary gland.	Acromegaly.	0.05 (gr. 1) per dose.
Opothyroidinum from the thyroid gland.	Myxoedema, cretinism, cachexia strumipriva, obesity, skin diseases (psoriasis, eczema etc.), absence of milk, haemophilia, torticollis etc.	0.05–0.1 (gr. 1–2) per dose, 0.15–0.6 (gr. 3–10) per day.
Opothymiinum from the thymus.	Deficient development of the newly born, paralysis infant. Grave's disease, leucocythaemia, chlorosis, anaemia.	0.2—0.5 (gr. 3—8) per dose, 0.6—3.0 (gr. 10—48) per day.
Opomammimum from the mammary gland.	Menorrhagia, metrorrhagia, uterine fibroma.	1.5 (gr. 24) per dose, 5.0—8.0 (5 1¼—5 2) per day.
Opoossiinum from the yellow bone marrow.	Rhachitis, osteomalacia.	0.9—1.0 (gr. 3–16) per dose, up to 6.0 (5 1¼) per day.
Opomedullinum from the red bone marrow.	Pernicious anaemia, pseudo-leucocythaemia, chlorosis, neurasthenia.	0.2—1.0 (gr. 3–16) per dose, up to 6.0 (5 1½) per day.
Opopancreatinum from the pancreas.	Diabetes mellitus.	0.2—0.8 (gr. 3–12) per dose, 2.0—8.0 (gr. 32–52) per day.
Opohepatoidinum from the liver.	Haemoptysis, icterus, epistaxis, cirrhosis.	0.5 (gr. 8) per dose, 1.5—4.0 (gr. 24–51) per day.
Opolieninum from the spleen.	Hypertrophy of the spleen, malarial cachexia, leucocythaemia, pseudo-leucocythaemia.	2.0—6.0 (5½–5 1½) per dose, 4.0—12.0 (5 1–5 3½) per day.
Oporeniinum from the kidneys.	Uraemia, chron. nephritis, albuminuria.	0.5—0.8 (gr. 8–12) per dose, 1.5—3.0 (gr. 24–48) per day.
Oposuprarenalinum from the suprarenal capsule.	Diabetes insipidus, Addison's disease, neurasthenia.	0.2—0.4 (gr. 3–6½) per dose, 0.4—0.8 (gr. 6½–12) per day.
Opoorchidinum from the testicles.	Spinal diseases and other nervous diseases.	0.5—0.8 (gr. 8–12) per dose, 1.5—3.0 (gr. 24–48) per day.
Opoorvariinum from the ovaries.	Climacteric symptoms, nervous symptoms in climateric after ovariotomy, hysteria, chlorosis.	0.2—0.8 (gr. 3—12) per dose, 0.6—3.0 (gr. 10–48) per day.
Opoprostatinum from the prostata.	Hypertrophy of the prostate.	0.2 (gr. 3) per dose, 0.8 (gr. 12) per day.

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Reviews.

HELFENBERGER ANNALEN 1897. Zweiter Band des zweiten Dezenniums. Im Auftrage der Chemischen Fabrik in Helfenberg bei Dresden herausgegeben von Dr. Karl Dieterich. Ein Bd., pp. 466. Verlag von Julius Springer, Berlin. 1898. M. 4.00.

A medical editor not very long ago created something of a sensation by prophecying that the drug store was doomed. He apparently was further of the belief that with the disappearance of this institution pharmacy would be wiped from the face of this earth as with a bold stroke of his pen. A pharmacist, looking backward over forty years of a varied professional experience, revealed a capacity for a much keener observation that led him to the following conclusion: "Pharmacy continues to live in chemical and other factories, in chemical laboratories, and in the institutions of higher learning, even though the apothecary and his shop are still here."

The truth of this statement is strikingly exemplified in the volume before us. German pharmaceutical journals several decades ago contained numerous notices on the improvement of galenical preparations, on tests for crude drugs etc. The same journals still contain these notices, but they emenate largely from the laboratories of pharmaceutical and chemical manufacturers. The progress made in this direction in these laboratories becomes apparent by a comparison e. g. of the size of the Helfenberg annals at the beginning of their first with that of those at the beginning of their second decade of publication. Not only is a marked difference in the size readily noticeable, but also a difference in their contents. Whereas the early numbers contained principally if not exclusively analytical data which in the course of time were to become serviceable in the judgment of the quality of drugs and their preparations, the present volumes contain in addition original articles, the results of special and sometimes of prolonged investigations. Some of these have already appeared in the pharmaceutical journals, others are published for the first time in this annual.

Not only has the large manufacturer a decided advantage over the pharmaceutical practitioner, who still makes some of his preparations on a small scale, by being able to buy cheaper and to manufacture more economically in general, but even as observer and scientific investigator he enjoys numerous advantages. He makes the

same preparation more frequently and manipulates much larger quantities so that many things which have escaped the pharmaceutical practitioner entirely it falls to his lot to observe. Waste- and by-products of no value to the former become valuable to the latter because of the quantity at his disposal. The former had to steal his minutes for scientific work, the latter has one or several investigators who devote most if not all of their time to research.

Inasmuch as we may have occasion to abstract from this annual, it seems hardly necessary to mention the details of its contents, which in a general way are fairly well known. It would be commendable, indeed, if more of our American manufacturing laboratories were to give scientific pharmacy the benefits of their observations in a similar manner. E. K.

KÖHLER'S NEUESTE UND WICHTIGSTE MEDICINAL-PFLANZEN in naturgetreuen Abbildungen mit kurz erklärendem Texte. Ergänzungsband zu dem in den Jahren 1883—1890 erschienenen Hauptwerke in 2 Bänden. Herausgegeben von Dr. Max Vogtherr in Gera. Druck und Verlag von Fr. Eugen Köhler, Gera-Untermhaus. Lieferung XX mit dreifachem Inhalt. 1898. M. 3.00.

With the present installment, this volume intended to supplement Köhler's well known and highly valued work is brought to a close. In addition to the preface, an index exhibiting the plants treated in the work arranged according to Eichler's system, an alphabetical index to the botanical names mentioned, and a very complete index of common plant names in several languages, of the active principles, and other important chemical compounds, accompany the text and plates. Thus the detailed information included in this work is made easily available. The text of the present part deals with a large number of plants, many of which have previously been illustrated. Plates of the following plants are here represented: *Sarothamnus scoparius* Koch., *Indigofera Anil* L., *Rhus succedanea* DC., *Cerbera lactaria* Ham., *Cerbera Odollam* Gaertn., *Cerbera Taughin* Hook. f., *Ilex paraguayensis* St. Hil., *Paullinia Cupana* Kunth., *Barosma betulina* Bartl., *Acocanthera abyssinica* K. Sch., *Betula lenta* L., *Cocos nucifera* L., *Elaesis guineensis* L., and *Zea Mays* L. The plates are of the usual good quality as regards execution and can hardly be too highly praised. In the last plate, an American of the corn-culti-

vating Northwest would be likely to suggest that the ear of corn chosen for illustration might in all due fairness have been a rather better specimen.

One little slip on the title page accompanying the introduction was not made on the covers of the individual numbers. As far as the writer knows, in the English language *America* is spelled with a *c* and never with a *k*.

As this volume closes, those who may be called upon to use the work must feel that much credit belongs to both editor and publishers. That similar additions will in the future prove likewise valuable is certain and it is sincerely to be hoped that this work may be kept up with the advance in this department of study by the publishing from time to time of other supplementary volumes.

Rodney H. True.

MANUALE DER NEUEN ARZNEIMITTEL für Apotheker, Aerzte und Drogisten, enthaltend über 2000 neue und neueste Arzneimittel, zusammengestellt von J. Mindes, Magister Pharmaciæ. Zweite vermehrte und verbesserte Auflage. Ein Bd., pp. 365. Art. Institut Orell Fuessli, Zürich.

It is less than a year ago that the first edition of this manual was reviewed in the columns of this journal (vol. 15, p. 188). It evidently has satisfied a demand for a guide through the ever-increasing mass of new remedies. The information given in the pharmaceutical journals is not only necessarily scattered, but is by no means always reliable. A manual on the subject which does not have to be gotten ready for the press as hastily as a journal ought, therefore, to be more reliable besides being much more convenient than the files of pharmaceutical journals.

The new edition contains only fifty-five articles more than the first, and a less number of synonyms. This slight increase in the volume of the book was brought about by eliminating those artic'es that are either official in the Swiss Pharmacopœia or have become obsolete, thus making more room for the new comers in the field.

How difficult it is to define "new" remedies becomes apparent by looking over the manuals in different countries. A drug that has been used in one of the American countries for one or several centuries, upon its introduction into European materia medica becomes a "new" remedy. The same is true of a plant constituent that has been

isolated by some chemist, European or American, possibly early in the century but has not been previously introduced as a therapeutic agent.

The fact, however, remains that a manual of this kind is not written with theoretical or historical principles as guide, but solely to fill a practical want. The pharmacist or physician who has occasion to consult such a work does not stop to inquire whether the remedy about which he desires information is old, new, newer or newest. The author has evidently succeeded in supplying the every-day want of the practitioner.

In his introduction, the author disclaims any pretension to a scientific treatise for his manual. Yet it would have improved the value of his manual as a practical guide if he had consulted original sources more than he apparently has done. In a number of instances the information is defective either chemically or therapeutically. Yet on the whole the information is such as to satisfy the practical wants of the pharmacist. Paper and press work of the handy volume are good, and a very detailed index adds materially to the usefulness of the book. *E. K.*

MISSOURI BOTANICAL GARDEN. Ninth Annual Report. St. Louis, Mo. Published by the Board of Trustees. 1898.

All who have ever had the pleasure and profit of inspecting the Garden at St. Louis must recognize in its founder, Henry Shaw, a public benefactor in a wide sense of the term, since here is open to the enjoyment of the public in greatest liberality not only sights of rare beauty and interest, but opportunities rarely equalled in the New World for the study of the kingdom of the plants. The reports emanating from this institution are, therefore, of great interest to all to whom the Garden may appeal.

The number at hand contains the customary annual report of the officers of the Board of Trustees, the report of the Director and a number of valuable scientific papers dealing in general with taxonomic subjects.

The financial condition of the Garden is excellent, in spite of certain untoward features, and the income for 1897 was over eight hundred dollars more than for the former year. Extensive and costly improvements are reported. Among others, the addition of a tract of two and a half acres costing ten thousand dollars may be men-

tioned. Large and valuable additions have been made both to the herbarium and the library. Some idea of the magnitude of this institution may be obtained from the statement that the present permanent investment aggregates $1,547,497.24.

The St. Louis public seems to avail itself of its unusual privileges. The Director reports over six thousand visitors on one rainy June Sunday afternoon, and over fourteen thousand on the first Sunday afternoon in September. Increased greenhouse accomodations have been provided during the past year. Several notable additions have been made to the herbarium; the large collection of J. H. Redfield, rich in the earlier collections representing the flora of the United States; the herbarium of the late Dr. J. F. Joor consisting chiefly of plants of Louisiana and Texas; the large herbarium of Gustav Jenny of San Antonio, Texas; an important prelinnean herbarium formed in 1750 by Böhmer and Ludwig, and over two thousand specimens collected in China by Dr. A. Henry, may be especially mentioned.

The library now consists, all told, of 31,013 books and pamphlets.

The scientific papers can be only enumerated in this place: A Revision of the American *Lemnaceæ* occurring North of Mexico, Charles Henry Thompson; Notes on *Salix longipes* Shuttlew. and its Relations to *Salix nigra* Marsh, N. M. Glatfelter, M. D.; A Revision of the Genus *Capsicum* with especial reference to garden varieties, H. C. Irish; List of Cryptogams collected in the Bahamas, Jamaica and Grand Cayman, Albert S. Hitchcock; *Agave Washingtonensis* and other Agaves flowering in Washington Botanic Garden in 1897, J. N. Rose; The Species of Cacti commonly cultivated under the generic name *Anhalonium*, Charles Henry Thompson; Notes and Observations by William Trelease, including a number of shorter notices on the following topics: The *Epidendrum Venosum* of Florida; Miscellaneous Observations on *Yucca;* The Missouri Dogbanes; A Coloring Matter found in some *Borraginaceæ*, J. B. S. Norton; Notes on Some Plants, chiefly from the southern states, J. B. S. Norton; A New Disease of Cultivated Palms, William Trelease, and *Parmelia molliuscula*, Henry Willey.

Among these numerous articles a number of them are of especial interest and will be more fully no iced elsewhere.

Fifty plates illustrate this volume; three represent features about the Garden, the remainder illustrate certain plants. A very successful result by way of a colored plate is seen in Plate 38. The artistic

work, as is always the case with the Reports of this Garden, is of a very high order. *Rodney H. True.*

VIERTELJAHRESSCHRIFT ÜBER DIE FORTSCHRITTE AUF DEM GEBIETE DER CHEMIE DER NAHRUNGS- UND GENUSSMITTEL, der Gebrauchsgegenstände sowie der hierher gehörenden Industriezweige. Unter Mitwirkung von Fachgenossen herausgegeben von Dr. A. Hilger. Zwölfter Jahrgang, das Jahr 1897. Ein Bd., pp. XII, 678. Verlag von Julius Springer, Berlin. 1898.

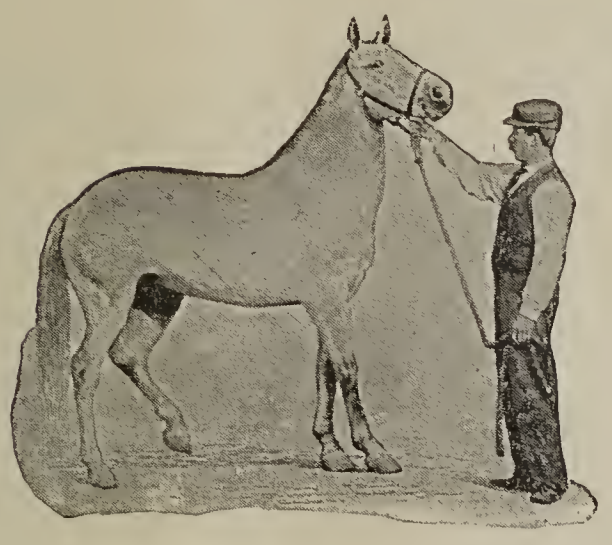
Concentration of capital and specialization of labor in the industrial field and the specialization of labor in the scientific field have developed in such a striking manner and have absorbed our attention to such a degree that we have given little thought to the concentration which is taking place in science, especially in the literary branch of science. The publication of a small work on botany by four prominent botanists almost created a sensation in botanical circles several years ago. Yet the cooperation effected between the German Chemical Society, the publisher of the Chemisches Centralblatt, and the author and publisher of Beilstein's Handbook of organic chemistry passed almost unnoticed, although this combination must be considered an exceedingly formidable one in the chemical world. It not only effects economy, but appears destined to be productive of even better results.

A combination on a smaller scale, but one that likewise effects chemists, particularly those chemists who are engaged in the examination of foodstuffs, beverages and allied products, was announced in this journal early in the year (p. 14.): the union of a monthly with a quarterly. The old monthly with its mixed program naturally ceased to exist as such at the close of last year. The quarterly which supplied abstracts from all sources, and the four annual numbers which constituted a yearbook on the subject of food chemistry, naturally could not be closed before all the returns for the year were in. With the appearance of the fourth number for 1897, the Vierteljahresschrift now likewise ceases to exist as such in order to make way for the larger usefulness of the new monthly, the Zeitschrift für Untersuchung der Nahrungs- und Genussmittel sowie der Gebrauchsgegenstände, published since the beginning of this year by the same well-known Berlin publishing house. *E. K.*

Pharmaceutical Review.

VOLUME 16. AUGUST, 1898. NUMBER 8.

Recent Changes in Pharmaceutical Manufacturing.*



During the World's Fair year, Americans were so preoccupied with the White City, which had grown like magic out of the swamps at the head of Lake Michigan, that we had little time to think of anything else than the architectural marvel which captivated our eye. It is true, there convened a chemical congress in Geneva, Switzerland, whose deliberations are made manifest more and more in recent chemical literature, whereas the scientific congresses at Chicago have almost been forgotten. Attention was also called at that time to the fact that the World's Fair year was also the four hundredth anniversary of the birth of one who more than any one else had brought about the overthrow of that evil spirit of the middle ages which for a thousand years had dominated the science of chemistry. Yet at that time we gave but little thought to the founder of the iatrochemical school, whose varied life has supplied the theme for a second Faust to one of England's greatest modern poets. Furthermore, in a series of articles on the chemical exhibits, the writer at

* It has been the policy of this journal to review from time to time some of the important changes in pharmaceutical manufacturing, an important branch of the household of pharmacy. In the last article of this series a model laboratory structure was described (vol. 15, p. 61). In this number we desire to call attention to some of the revolutionary changes brought about by the introduction of recent biological remedies. The cuts have been kindly loaned by the firm of Parke, Davis & Co. of Detroit.

that time incidentally stated that animal materia medica had apparently become a fad in France as was demonstrated by a section of the French chemical exhibit. The hope was expressed that animal chemistry might be the gainer. That the public would directly profit by what then made the impression of a fad did not occur to the writer or apparently to any one else. Our attitude, however, has

Twin stables which with their co

changed radically within the last few years. Organo-therapeutic, opo-therapeutic and other therapeutic preparations from animal sources have been the object of careful scientific study and investigations which have contributed not only to our materia medica, but more fundamentally even to animal physiology. Owing to their very origin and nature, however, there adheres to them a pathologic something that makes them ready tools in the hands of quacks and

charlatans as well as valuable medicaments in the hands of the educated physician.

In this connection it may be of interest to mention that Paracelsus, though strongly advocating the use of chemical remedies in opposition to the older galenical school, was not averse to the use of animal remedies. Julius Stinde,* who is, no doubt, better known

l paddocks occupy an entire square.

to German readers under the pseudonym of Mutter Buchholz as an author of humorous stories than as a medical writer, has recently called attention to the fact that Paracelsus used a specific prepared from the spleen of the ox for similar purposes for which eurythol is used to-day. An interesting parallel between the old iodine remedies and the new organo-therapeutic preparations containing this element

* Therap. Monatsh. 12, p. 118.

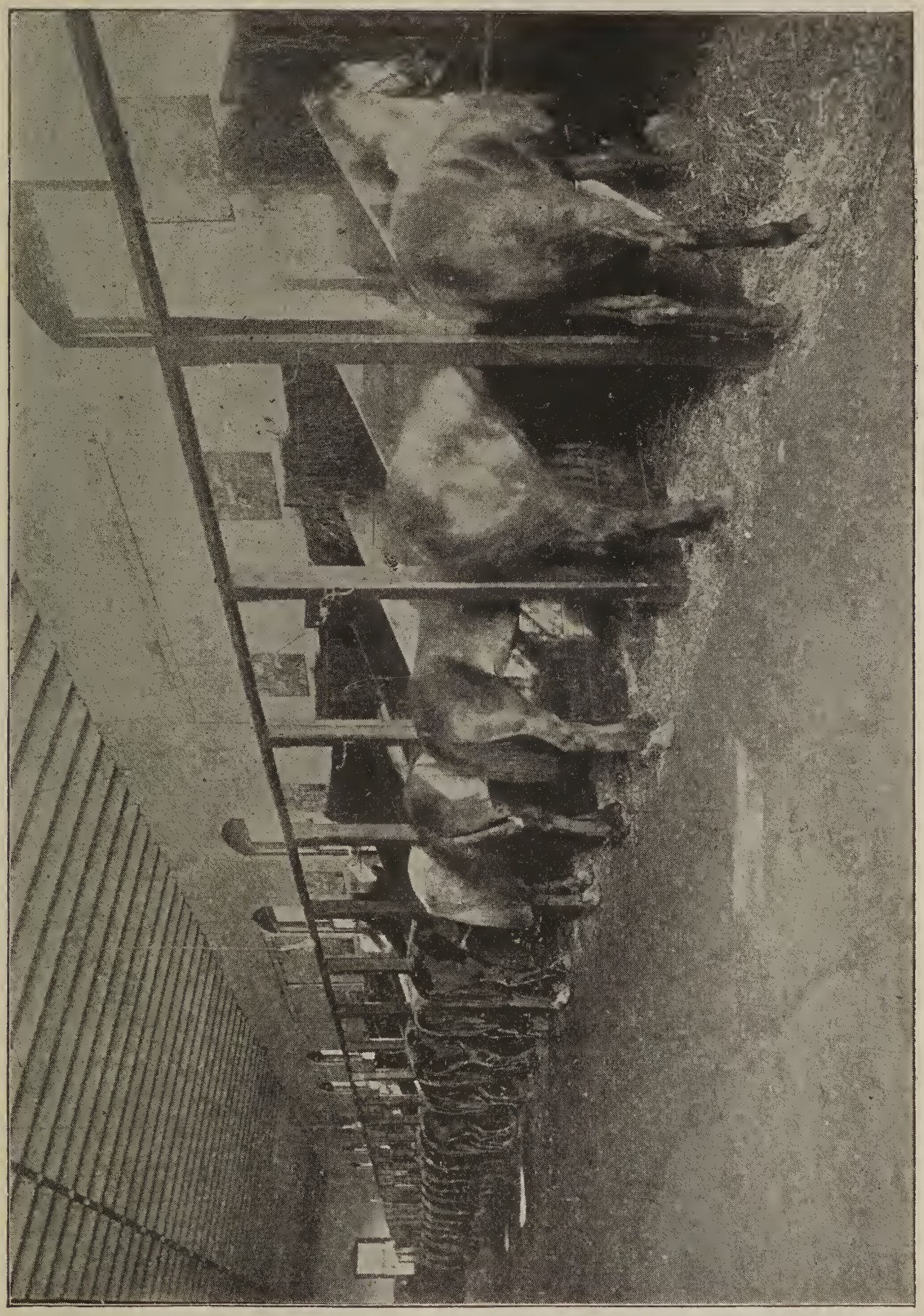
was drawn by a writer in the same journal about two years ago. With what justice such parallels are drawn cannot be determined without careful study.

There have also come into use a class of animal, or rather biological remedies in recent years of greater interest and importance even, both theoretically and practically, than those alluded to. Fortunately they are of such a nature and potency that they do not lend themselves readily to popular medication. Whereas the principle underlying the administration of the toxines may be said to be as old as the practice of vaccination by scientific physicians, the application of the antitoxines as a natural consequence and concomittant of toxine therapy is but recent. Instead of making the patient, not necessarily sick, produce his own remedy, animals are made to produce it for him so that the remedy can be applied in the case of sickness or when disease is apprehended. If, in a general way, the toxine can be considered as belonging rather to the type of preventive medication, the antitoxine may be considered a true physiological remedy.

That toxines and antitoxines have possibly had their forerunners in popular empiric medication is not as readily demonstrable as in the case of organo-therapeutic preparations. It is reported that persons have accustomed themselves to the use of increasing doses of certain poisons, so that they might be able to withstand the effects of doses ordinarily fatal when administered to them secretly with criminal intent. Again the popular belief that every poison produces its own antidote may have found application in a manner now possibly explicable on an antitoxine basis, viz. the drinking by sick persons of their own urine.

On whatever scientific or unscientific basis these forms of popular medication are to be explained, this much is certain that pharmacy had very little to do with them. However, since bacteriologists and physiologists have demonstrated on an experimental scale the theory and practice of these latest forms of medication, pharmacy was found prepared to manufacture the antitoxines, etc. on a sufficiently large scale to supply the demand. Inasmuch as it required the education and skill of specialists as well as a capital of no mean proportions, it was out of the question to prepare these remedies in the small laboratories attached to retail pharmacies. They had to be made in specially constructed and equipped laboratories of the phar-

maceutical manufacturer. The truth of the recent assertion by Mylius, that pharmacy continues to live in the laboratories of the pharma-



A row of stalls.

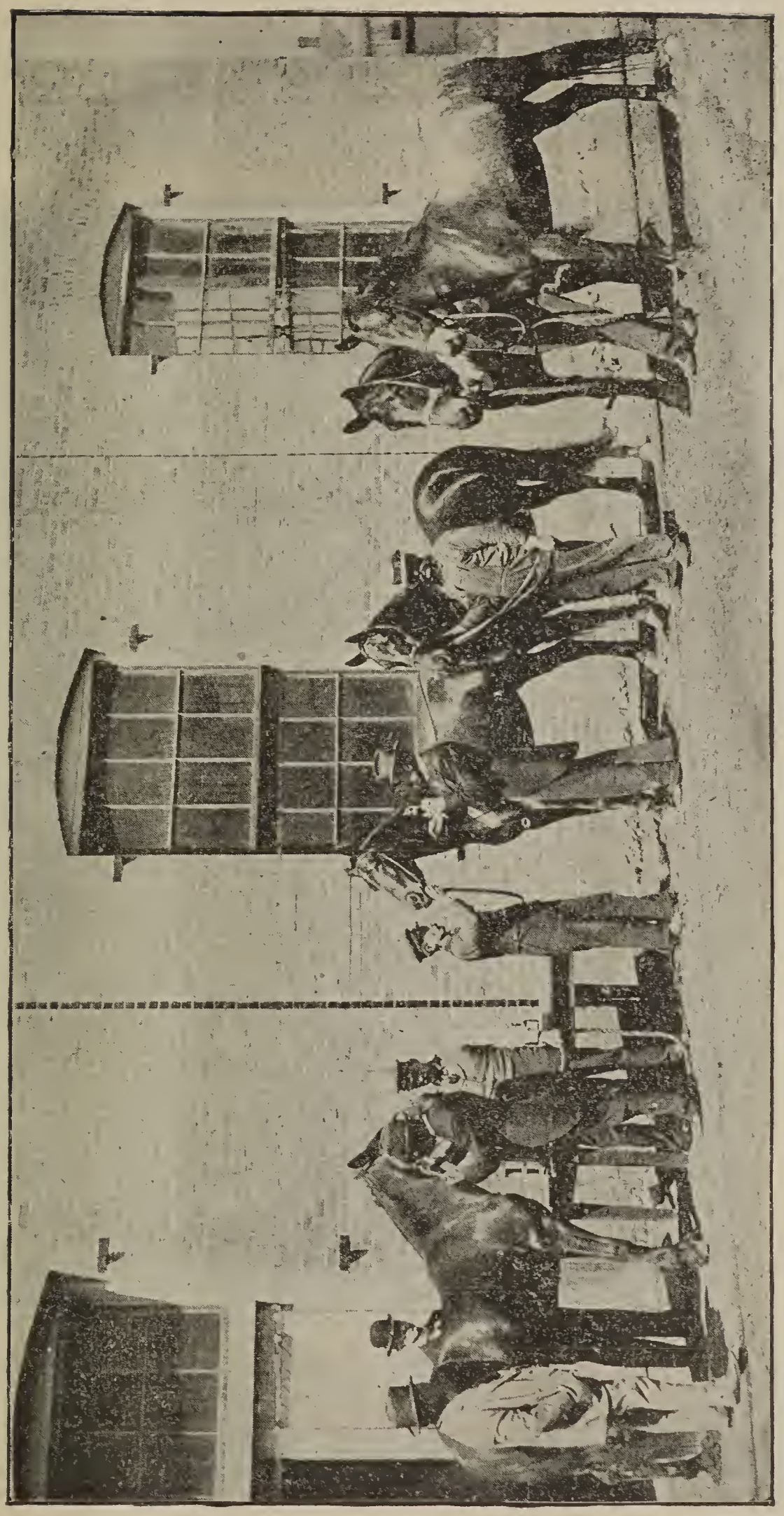
ceutical manufacturer, etc., rather than in the average drug store, was drastically demonstrated in connection with the manufacture of this new class of preparations.

Inasmuch as the pharmaceutical manufacturer has supplied the medical practitioner to a large extent directly with many of these new preparations. the pharmaceutical practitioner is apt to consider this branch of medication as one which does not concern the household of pharmacy. The fact is that economical and educational changes effecting our calling have been so rapid and marked in late years that we have not yet accustomed ourselves to the view that the pharmaceutical manufacturer, whether of chemicals or galenicals, of organo-therapeutic preparations or of serums, belongs to the household of pharmacy.

A few years ago when some of our large pharmaceutical manufacturers began to manufacture serums, the half dozen or less horses in a small barn attracted attention as a novelty in the establishment, but the serum department dwindled almost to insignificance when compared with the enormous laboratories in which vegetable drugs were converted into fluid extracts, etc. To-day much of this has changed. In large, well ventilated barns, hundred and more horses are kept and well taken care of. There is a large barn yard in which they exercise in fine weather. For poor weather a covered court enables them to exercise in spite of the storm that may be raging outside. Besides the horses one sees a veritable menagerie of animals used for various experiments, all housed in clean appartments, well fed and well taken care of generally. But for want of freedom these animals lead on the whole an enviable life.

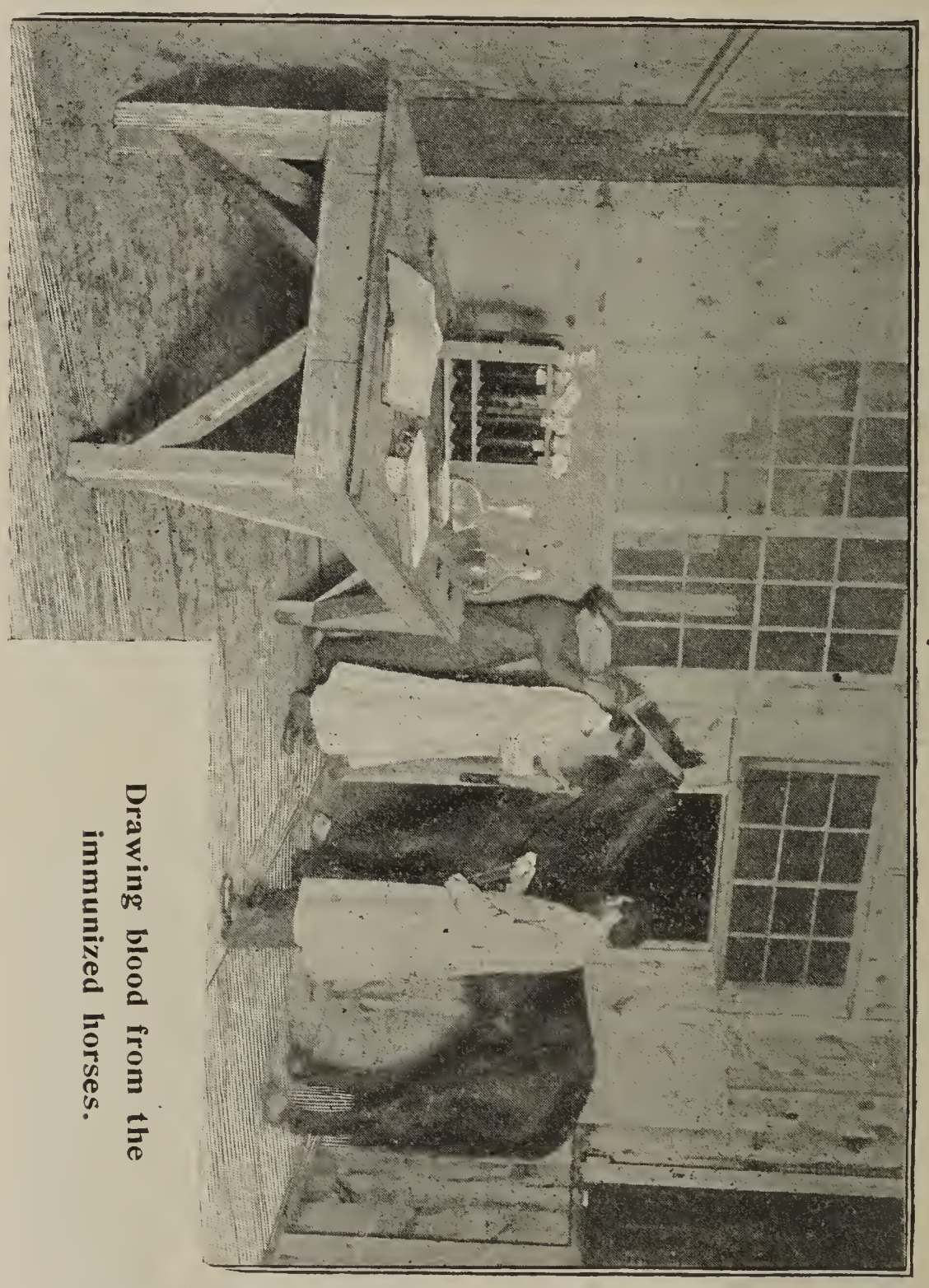
If the older laboratories with their earthenware or metallic percolators impressed the visitor with the order and cleanliness that prevailed, the laboratory of the serum department impresses one with the awe of the operating room and the need of antiseptic or better aseptic conditions wherever possible. The fact that even horse blood is precious is impressed upon the visitor if he sees how carefully the red fluid is guarded when drawn, how the cylinders containing it are stored in large refrigerator rooms like the rolls of precious metal in the vaults of a bank.

The necessity of scientific control becomes apparent to any one who has visited such a laboratory. Yet most of the routine work can be done by persons who know extremely little about animal physiology or bacteriology. The American student who regarded a combustion as one of the greatest chemical feats he had accomplished during his undergraduate work in college is often surprised to find



Injecting the toxins.

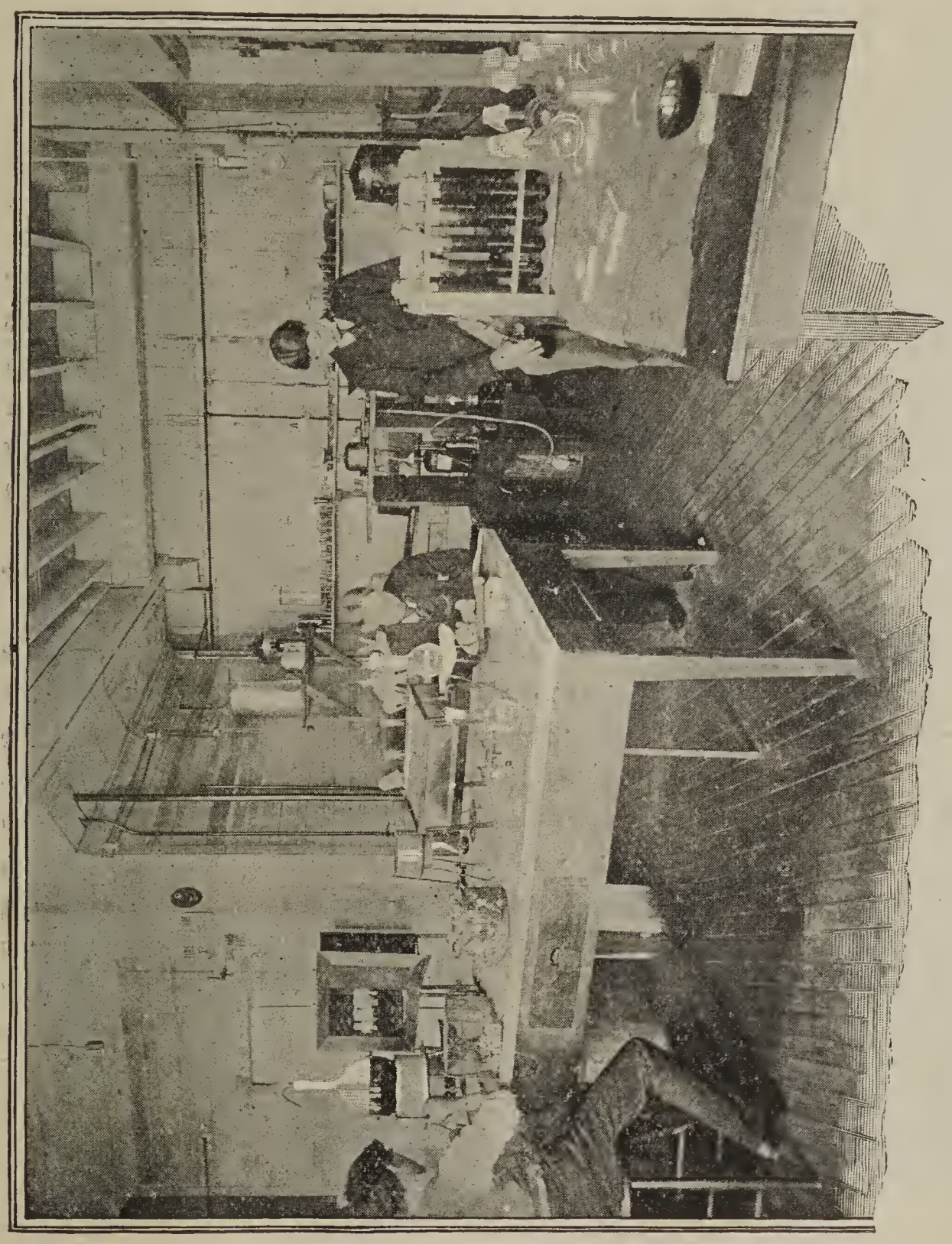
that in German chemical laboratories the janitors are more expert in such matters than he is. So in the chemical factory the office boy of the chemist may be able to assay an ore fully as well as his master, a Ph. D., although he may not have an inkling of the chemistry



Drawing blood from the immunized horses.

involved. So in this new industry. A careful groom with ordinary intelligence soon learns to take good care of the antitoxine breeding horses in his charge. Young men soon become as skilled in injecting the toxine and in withdrawing the blood rich in antitoxine as nurses

in the hospital in dressing wounds antiseptically or aseptically. So with the treatment of the blood. So also with the bottling and labeling of the finished preparation by girls. The fact that the small vials are filled with all precautions to avoid contamination of any



Siphoning the serum from the blood tube and preparing culture media.

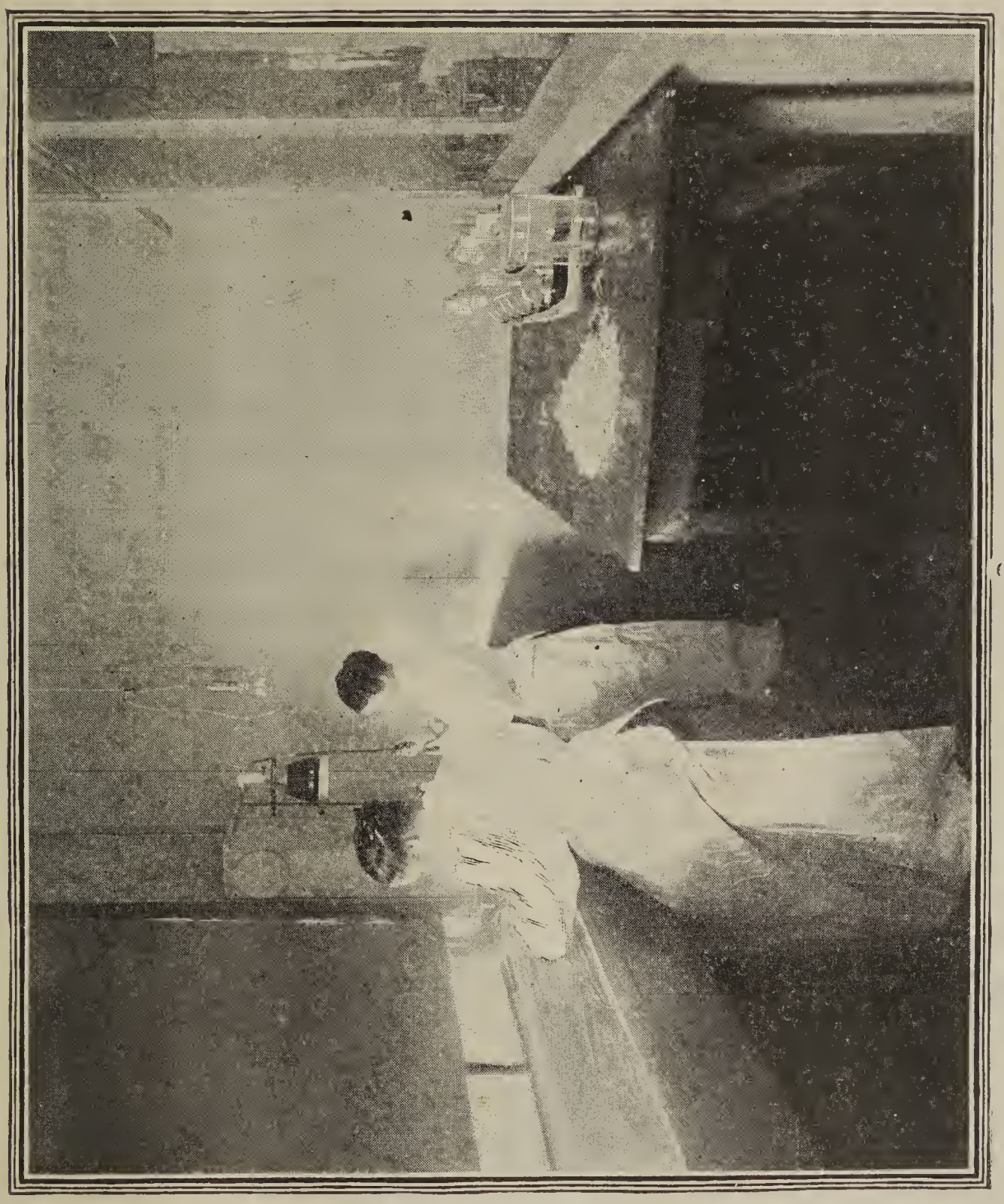
kind, that the girls who do this work are shut off in small glass compartments by themselves impresses one with the care that is necessary; but the fingers of uneducated but trained girls accomplish this work with more neatness and dispatch and no doubt with as

great care as the more clumsy fingers of the bacteriologist or physiological chemist, no matter how learned. In fact, the brains of the latter two are wanted elsewhere.

The newness of serum therapy, the idea of combating bacteria with their own antidote as it were, and the fair amount of success that has been coupled in this new branch of therapeutics in the suppression of some of the most dreaded diseases, naturally lead to the thought that perfection in this department of medicine has almost been reached. Improvements are almost daily made, but these seem of minor importance and so far this has been largely true. The number of units of curative power, to translate into somewhat popular language a technical term, has been increased. One manufacturer has tried to outdo the other in this respect, and physicians seem to have fallen prey more or less to the idea that the strongest toxine must also be the best. The fact, however, seems to be that the strongest solutions are also apt to be the most unstable. There, therefore, lies in the increased strength an element of pharmacological danger.

Fortunately the effect of the antitoxine solutions can be ascertained pharmacologically, though chemically we know almost nothing about them. Our chemical knowledge of these substances is even in a more deplorable condition than that of most of our more valuable galenical preparations. Preparations of ergot are now assayed pharmacologically—a chemical assay being out of question—but we have at least some knowledge as to some of the chemical substances contained in these preparations. Of the antitoxic substances dissolved in the various antitoxines (meaning the finished sero-preparation) we know practically nothing. But, with the amount of research in this direction that is going on at present, who may tell but what some antitoxine, i. e. the chemical unit, may not be isolated in the pure state before we shall have occasion to celebrate the hundreth anniversary of the discovery and isolation of the first alkaloid. This accomplished, its constitution will have to reveal itself to the search of the ever-active chemist and its synthesis, partial and complete, will then be only a question of time. In the same manner in which the madder disappeared from the fields of France and the waste coal tar made the manufacturer of alizarin independent of the soil and the sun, so the menagerie of our pharmaceutical manufacturers may disappear some day as rapidly as it has recently developed.

Those who are not familiar with the scientific theories underlying the preparation of antitoxines and antitoxine therapy will find Hueppe's Wissenschaftliche Einführung in die Bakteriologie (Vol. 14, p. 292), an English translation of which (p. 62 of the



Filling the bulbs with antitoxine under aseptic conditions.

Supplement) has just appeared, a valuable source of information on this and related subjects. Short scientific articles as well as more popular, illustrated articles can be had from almost all of the American manufacturers of serums. *E. K.*

Fragmentary Notes from the Reports of Two Early Naturalists on North America.*

By *Fred. Hoffmann.*

Dr. Johann David Schöpf, born March 8th, 1752, at Wunsiedel, lived in Ansbach in 1777 as a physician. When German troops were enlisted for British service during the war of independence in North America, Dr. Schöpf accompanied Hessian troops sailing for the colonies in March 1777 and arrived on Staten Island June 4, 1777. After the cessation of hostilities after the treaty of Versailles, April 19, 1783, the German troops were disbanded and Dr. Schöpf obtained permission to travel in the States as a naturalist and with a view of exploring the new country as much as possible.†

He embarked in New York, July 22, 1783, and reached Elizabethtown, N. J., the following day. From here he traveled by way of Bridgetown, New Brunswick, etc., reaching Philadelphia July 26. He found this to be quite an interesting city, meeting there Benjamin Franklin as a health officer and Benjamin Rush as physician and chemist, and a son of John Bartram, who had died in 1777. He remained in Philadelphia more than two weeks, studying with much interest the institutions, the churches, and the political and municipal affairs of this capital. In August Dr. Schöpf set out for an extended exploring tour, passing Germantown, then six miles distant from Philadelphia, Rocky Hill, Bethlehem, Nazareth, Brinker's Mill, the Pocopo Wilderness, the Wyoming Valley, Wilkesbury (Wilkesbarre), Bear Creek and the wilderness of the Allegheny Mountains to and beyond Pittsburg as far as Ohio and Kentucky. In October he returned by way of Pittsburg, Sheppardstown, Frederickstown to Baltimore, then a city with but about 12,000 inhabitants. From here he visited Bladensburg, Annapolis, Georgetown and Alexandria, and returned to Philadelphia where he remained until November 1783, making occasional trips to Lancaster, Reading

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* Continued from p. 265.

† See also the life and works of Johann David Schöpf by Hermann Peters in *Pharmaceutische Rundschau*, Vol. 13 (1895), p. 151.

and other places in the vicinity. In Lancaster he met Henry Mühlenberg, then lutheran pastor in Lancaster.* In November 1783 Dr. Schöpf started southward, chosing the so-called back-road through Virginia and North Carolina to Charleston in the expectation of finding many objects of interest to naturalists. Bad roads, however, forced him to resort again to the coast; he remained two months in Charleston and subsequently some time in St. Augustine, Florida. On March 29, 1784, he used the first opportunity for sailing to the Bahama Islands. After visiting several of these islands and staying for some time in Nassau, Dr. Schöpf left the new world on June 7, 1784, and arrived in London after 30 days' sailing.

After his return Dr. Schöpf settled as a practicing physician in Bayreuth, but soon made extensive trips to Italy, France and Holland, and subsequently filled high positions in the medical administration of the Prussian domain of Ansbach-Bayreuth. He died Sept. 10, 1800.

After the year 1785 Dr. Schöpf engaged in the publication of the records and observations of his exploring voyages in America. Among these, two works are of value and interest to the natural history of North America. The first one was a concise enumeration of the useful and medicinal plants met with in the Atlantic States; this rather brief compilation appeared in 1787 under the title: *Materia medica americana potissimum regni vegetabilis. Erlangæ; sumptibus Joh. Jac. Palmii;* 1787: In this work Dr. Schöpf enumerated all the medicinal plants met by him or mentioned by earlier botanists or writers on the flora of North America.

In the same year he published his observations on the mineralogy of North America under the title: Contributions to the Knowledge of the Mineralogy of the Eastern Part of North America and its Mountains.

A year later, in 1788, the more comprehensive report of his American travels and explorations appeared in two volumes under the title: Reise durch einige der mittleren und südlichen Vereinigten Nordamerikanischen Staaten, nach Ost-Florida und den Bahama-Inseln, unternommen in den Jahren 1783 und 1784. 2 Theile. Erlangen, Joh. Jac. Palm. 1788.

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* See Henry Mühlenberg as botanist, by John M. Maisch, in *Pharmaceutische Rundschau.* Vol. 4 (1886), p. 119.

The comprehensive knowledge and broad views of Dr. Schöpf, his close observation of men and matters, of the political, religious and educational conditions of the country, impart to his work a special interest to students of the history of the United States as well as of the condition of the healing art in America at the time of his visit. As an accomplished student and practitioner of medicine, he paid much attention to professional affairs and to the useful plants cultivated and growing wild, as also to the collection, commerce and uses of those used for medication by the physicians, by settlers and by the Indians.

Schöpf, after travelling through Pennsylvania, calls it a "land of oaks" (Vol. I, p. 297) on account of the prevalence of a great variety of oaks, as well as of their strength and beauty in the extended forests. He in general is impressed by the fertility of the land and by the abundance and the vigor of the plant world and of the forests (Vol. I, p. 415). He mentions and describes in general the same trees, indigenous in and characteristic of the flora of the Atlantic States, as were reported by Prof. Kalm, but at this time, nearly 40 years later, the number of the indigenous plants used for medication had considerably increased. Among other observations he states that maple sugar was in common use as being considerably cheaper than cane sugar (Vol. I, p. 417).

Among medicinal plants collected for pharmaceutical or domestic use and for commerce and export, Schöpf enumerates at various places and in various States senega and serpentaria (Vol. I, pp. 282, 362), *Chenopodium anthelminthicum*, *Cunila pulegioides*, *Collinsonia*, *Lobelia syphilitica*, *Aralia racemosa*, *Asclepias tuberosa*, *Aristolochia fratescens*, *Sanguinaria canadensis*, *Ranunculus sceleratus*, *Liquidambar styraciflua*, *Sassafras*, *Viburnum prunifolium*, etc.

The practicing physicians, however, seem to have resorted much to imported drugs, so that Dr. Schöpf remarks (Vol. I, p. 443) that they should "exercise more patriotism by making themselves better acquainted with the rich domestic materia medica." "It shows impardonable indifference towards the blessings of their country in medicinal plants, when it is manifest that they almost entirely depend in their practice on imported drugs, which could well be supplanted by domestic ones." On the other hand he expresses his pleasure at having met at least one German pharmacy in Philadelphia where the German farmers and settlers in Pennsylvania could

obtain all their accustomed domestic remedies used in the old country (Vol. I, p. 121).

Among the various useful plants, Dr. Schöpf notices several times indigenous tea used in place of the expensive imported Chinese tea. As such American tea he names the leaves of *Ceanothus americana* as being equal to the inferior kinds of Chinese tea (Vol. I, p. 417). In western Pennsylvania the leaves of *Solidago suaveolens* were used for the same purpose (Vol. 1, p. 466), and in North Carolina the leaves of *Ilex cassine* (*Cassine paragua*). Of these Dr. Schöpf adds, that this "South Sea Tea" is said to have been largely exported to England, where it met with favor, but that the export has ceased in consequence of its prohibition in England on the ground of commercial interest for the importers from China (Vol. II, p. 176—177). Believing that he had seen Chinese tea plants cultivated in gardens in Virginia (Vol. II, p. 119), Schöpf argues that the cultivation of true tea would be practicable and profitable in several parts of the United States, inasmuch as they have the same degrees of latitude and similar climatic conditions with China. In evidence he mentions the prevalence of ginseng, which is indigenous from Canada to the Carolinas. He met gatherers of this root on his way from Pittsburg to Bedford Springs, and adds the statement that the root was not used in America but was much in demand by French dealers, who exported it to England, from whence it was said to pass on to China. He states that the plant was almost exhausted in the Eastern Alleghenys, but that it is still abundant in Western Pennsylvania so that one gatherer sometimes collects as much as 60 pounds in one day. On drying, three pounds of fresh root yielded one pound of dried root.

During his stay and trips in North Carolina Dr. Schöpf took every opportunity to become familiar with the turpentine industry, then already of importance to the commerce of that and other Southern States. He enumerates and describes the principal pines yielding turpentine, and the methods of tapping the trees, of gathering the balsam and of its use for obtaining oil of turpentine and rosin, as well as of obtaining tar and pitch. (Vol. II, pp. 220—223 and p. 273).

In South Carolina he also observed and described the cultivation of the indigo plant and the preparation of indigo (Vol. 2, pp. 141 and 247—252).

Besides oil of turpentine, Dr. Schöpf, like Prof. Kalm, nowhere mentions the distillation of any other American essential oil. It therefore seems that until the years 1784 the primitive distillation of the oils of sarsafras, of pennyroyal, of wormwood, of wintergreen etc. was practiced either not at all or only by few persons; else Dr. Schöpf, being very inquisitive about any and all remedial drugs and substances, would have noticed indigenous products of such marked aromatic and therapeutic properties.

Among other products of nature, Dr. Schöpf dwells occasionally upon the prospective wealth of America in ores, and expresses the opinion that the time will come when it will fully provide for its entire supply of metals, coal, etc. Petroleum had been bored and was obtained in western Pennsylvania near Allegheny Creek (Vol. I, p. 388—391). Salt springs had been found and utilized in a few places in western Pennsylvania, and in New York near Lake Erie. It is said that they had been discovered by the observation that buffaloes and deers resorted to these localities for licking the crystallizations of salt on the ground; these places therefore were called "salt licks."

In several localities Dr. Schöpf's attention was called to saltpeter caves* and to whole districts where saltpeter was said to appear on the ground when drying up during the summer season. It was said that saltpeter "*nitrum nativum*" had been made and used for the manufacture of gun powder during the Mexican war in localities south of the Potomac River and in Virginia. (Vol. I, p. 527—534.) He also reports some tobacco plantations as being so rich in saltpeter that from the soil as well as from some sorts of tobacco (salt marsh tobacco) saltpeter had been manufactured (Vol. I, p. 530).

The scarcity of saltpeter during the revolutionary war was so great that not enough gun powder could be obtained by importation or by manufacture and, in order not to discourage the troops, barrels filled with black sand were sometimes passed along with the gun powder barrels of the artillery on their marches. (Vol. 1, p. 534.)

Dr. Schöpf's observations and references to the practice of medicine are frequent and to the point. He states in general that every one in America practising the healing art and trading in

* An interesting report on saltpeter caves in North America may be found in *Pharmaceutische Rundschau*, Vol. 9 (1891), p. 185.

medicines is called a doctor. The practice of medicine was in no way regulated by statutes and in general no discrimination was made between regular physicians and illiterate cure-alls. He recalls a recent controversy between the regular practitioners and the quacks in Connecticut. The former demanded that the latter pass an examination before a medical board. These resented such an interference and the Assembly decided in favor of the irregulars and against any monopoly in the practice of medicine. (Vol. 1, p. 107.)

Of the physicians in Philadelphia, Schöpf states that they enjoyed a very remunerative practice, but that the best paying part of it consisted in their own dispensation of medicines. Each doctor kept a full stock of medicine and a few students of medicine who prepared and dispensed their prescriptions. (Vol. 1, p. 121.) He found the country physicians in a less favorable position, particularly in the Southern States. They also dispensed their own prescriptions but had much trouble in getting their pay. Their stock in drugs was a very limited one, mostly consisting of cream of tartar, tartar emetic, saltpeter, jalap, peruvian bark and a few other drugs. (Vol. 2, p. 180.)

For vaccination the lymph of men and not of cows was used.

Dr. Schöpf enumerates quite a number of special cures of which he was informed by the various medical men whom he met on his travels. Interesting are his remarks on the Indians and their reported remedies and medication. In referring to Benjamin Rush's address delivered Feb. 4th, 1774, before the American Philosophical Society, containing an enquiry into the natural history of medicine among the Indians in North America, Dr. Schöpf says: "The supposition that the Indians are the possessors of special specific remedies and of superior knowledge of healing diseases is a delusion. I can not find any foundation for such a belief. The Indian when in need resorts to domestic herbs, barks and roots, purges, sweats and starves himself unmercifully, uses cold water plunges, and either gets better or succumbs. By constant exercise in fresh air the Indian has a strong constitution; weaklings perish early. His mode of living hardens his vitality, enabling him alternately to bear with immunity the extremes of heat and cold, of surfeit and of starvation." (Vol. 1, pp. 436—442.) At various places in his writings Schöpf enumerates a number of the common vegetable drugs formerly, or probably first used by Indian medicine men.

During his various prolonged stays in Philadelphia, Dr. Schöpf favored by the attention and the assistance of the foremost scholars of the city, informed himself as much as possible on the condition of public affairs, on the religious, educational and scientific institutions and on their principal representative men. In his notes he describes a "college" for the higher education, established in 1754 and located at the corner of 4th and Arch Sts., (vol. 1, p. 103), to which a department of medicine had been added later on and which had been raised to the rank of a University in 1780. Among the professors in the medical department, he names Benjamin Rush, professor of chemistry, distinguished by "the elegance and flowery style of his rhetoric," Morgan, professor of the practice of medicine, Kuhn, professor of materia medica, Chovet, professor of anatomy, and professors Shippen and Bond. (Vol. 1, pp. 115—120.)

As corresponding colleges for general education there are mentioned, (vol. 1, p. 109), those at Cambridge, Mass., New Haven, Conn., New York City, Williamstown, Va., Washington College, Delaware, and Dickinson College, Pa.

The "Philosophical Society," founded by Benjamin Franklin, is also mentioned with the statement that it soon had degenerated by a too indiscriminate admission to membership. It had, however, been reorganized in 1769 and after some dissention had fairly well prospered. Its publications commenced with the year 1771 under the title: *Transactions of the American Philosophical Society.* (Vol. 1, pp. 110—111.)

At the time of the stay of Dr. Schöpf in Philadelphia, the "Pennsylvania Hospital" was in course of erection: one wing of the building was already in use: this contained a dispensing pharmacy managed by turns by students of medicine, who received free board as compensation for their work. (Vol. 1, p. 97.)

The works of Prof. Peter Kalm and of Dr. Johann David Schöpf will ever remain fertile sources of valuable and comprehensive information to students of the history of culture as well as of the natural history of the United States at the time of their reaching politicial independence. As such they are deserving of due and wider attention and appreciation by the librarians and the scholars of the great American Commonwealth.

Note upon the Volumetric Assay of Opium.

By *H. M. Gordin* and *A. B. Prescott.*

In our recent report* upon the estimation of morphine in opium, by formation of a periodide of morphine, we found, in agreement with Jörgensen,† that the periodide was a tetraiodide, both when the morphine was in excess and when the iodine was in excess. By these results we obtained the factor for volumetric estimation, and found the factor to hold good in estimation of a morphine solution under conditions reported. We have since found that when obtained from the assay extract of opium by our method, the precipitate is of different crystalline character. We are engaged upon the determination of the conditions necessary to a constant product, and shall report again when our results are confirmed.

University of Michigan, June 30, 1898.

The Assay of Fluid Extract of Belladonna.

By *W. A. Puckner.*

In the following the writer wishes to present a process for the assay of fluid extract of belladonna, and with it a series of experiments which led to its adoption. He has elsewhere‡ discussed the superiority of Keller's method of assaying alkaloidal drugs and there also stated his objections to the use of an aliquot portion of the ethereal extract as directed by Keller. In working out a method for the valuation of this fluid extract the aim has been to find a method possessing all the good points of that of Keller, at the same time excluding its objectionable feature. To adapt the Keller method to the assay of fluid extracts, two courses have been taken: either the volume of liquid to be used in the assay is distributed over a suf-

* Pharmaceutical Archives, June, 1898.
† 1870: J. pr. Chem. (2), 2, p. 437.
‡ Pharm. Review 16, p. 180.

ficient quantity of absorbent material, usually sawdust, and this when dried is treated as in the regular method of assay; or else, a measured volume of the fluid is mixed with a stated quantity of chloroform ether, the required quantity of ammonia water added, the flask stoppered and well shaken, and when the ethereal layer has separated, an aliquot portion is decanted and the assay concluded in the usual way.* In the second plan the error caused by the use of an aliquot portion is considerable and is shown in the following experiment. When 100 cc. of chloroform-ether, 10 cc. of fluid extract and 5 cc. of ammonia water were mixed, it was found that the supernatant solution measured 106 instead of 100 cc.; the use of an aliquot portion would therefore have caused a minus error of 6 percent. In the first plan, where the fluid extract is brought to dryness on sawdust, the error is of course no greater than when operating upon the drug itself or probably even less, since oak sawdust is much less bulky than belladonna leaf, but this evaporation of the fluid extract takes time and also courts loss of alkaloid by decomposition.

The several experimental methods submitted to trial avoid evaporation of the fluid extract and aim at the extraction of the alkaloid from the entire quantity of fluid operated upon, otherwise they are much like the original Keller method. The final evaporation of the chloroformic solution of the alkaloid preparatory to the titration is directed to be carried on at a temperature of 25 to 35° C. While it is safe to recover the chloroform by distillation when proper precautions are used, yet, after considerable experience with this, I have concluded that in the end it is economy to dissipate the chloroform at a moderate temperature and thus avoid all danger of decomposition of the alkaloid. A temperature slightly above that of the room is directed as I have found that when evaporating spontaneously the chloroform and its container is liable to become sufficiently chilled to cause condensation of moisture upon the fluid, this seemingly causing decomposition of alkaloid; thus, in assaying the fluid extract employed in these experiments, as will be shown presently, approximately 2.5 cc. of $\frac{1}{20}$ normal acid were required to neutralize the alkaloidal residue obtained from 10 cc. of fluid extract, while, when evaporating at room temperature in a moderate draught, sufficient to cause the conden-

* Com. on Indicators. Proc. A. P. A., 44, p. 110.

sation of some moisture upon the chloroform, the alkaloidal residue required 2.25 cc., 2.35 cc. and 2.3 cc. of the volumetric acid; further, when the evaporation was carried on in a strong draught causing a considerable amount of moisture to deposit, but 2.1 cc. and 2.15 cc. were used.

Experimental Method A.—Measure 10 cc. of fluid extract into a separator, add 100 cc. of chloroform-ether mixture (chloroform 20 cc., ether 80 cc.), ammonia water, 10 percent, 5 cc. and shake well. After a few minutes draw off the heavier aqueous portion and wash out what remains in the stopcock and outlet with two portions of water, 2 cc. each, added and drawn off without agitation. Extract the chloroform-ether solution containing the alkaloid, successively, with 10, 10 and 10 cc. of 1 p. c. hydrochloric acid. To the acid solution, which now contains the alkaloid, add 5 cc. ammonia water, 10 percent, and remove the alkaloid with 20, 10 and 10 cc. of chloroform. Evaporate the chloroformic solution at a moderate temperature (25—35° C.) and when all has evaporated dissolve the residue in 5 cc. of ether and again bring it to dryness so as to ensure the complete removal of ammonia. To determine the alkaloidal content of this residue, add to it about 5 cc. of ether, about 5 drops of cochineal test solution and gradually a slight excess of 1/20 N acid; when complete solution has taken place and the ether has evaporated, determine the excess of acid with 1/20 N alkali. Each cc. of acid is taken to represent 0.01442 gm. of alkaloid.

Experimental Method B.—Measure 10 cc. of the fluid extract into a short-necked flask and add to it, successively, chloroform-ether (composition as in A) 50 cc., ammonia water 5 cc. and shake well. When the liquid has separated into two layers, decant the clear supernatant layer to a separator; complete the extraction of the alkaloid with two further portions of the solvent, 25 cc. each, adding it to the liquid remaining in the flask, agitating and decanting into the separator containing the solvent first decanted. Now extract this ethereal solution with 1 percent hydrochloric acid, using three portions of 10 cc. each, and finish the assay as directed in Method A.

Experimental Method C.—Measure 10 cc. of the fluid extract into a separator and add water 10 cc., chloroform 20 cc., ammonia water, 10 p. c., 2 cc. and shake thoroughly. When the two layers have separated completely, draw off the heavier, receiving it a separator; complete the extraction of the alkaloid with two further portions of

chloroform, 10 cc. each, adding this to the chloroform solution first drawn off. Shake the chloroform solution of the alkaloid with 20 cc. of 1 percent hydrochloric acid and when separation has occurred draw off the chloroform into a clean separator, using a few cc. of chloroform to remove the portion remaining in the stopcock and outlet of the first, and again shake the chloroform with 1 p. c. hydrochloric acid, using only 10 cc. this time. Draw off and reject the chloroform and add the last acid extract to that in the first separator, using a few cc. of water to complete the transfer. To the united acid solution add a few cc. of chloroform, draw off and reject the same, and now add chloroform 20 cc. and ammonia water 2 cc. and shake well. Draw off the clear chloroformic solution; complete the extraction with two further portions of chloroform, 10 cc. each. Evaporate the chloroform and titrate the residue as directed in Method A.

The following table shows the results obtained with each method:

Method used.	Cc. of 1/20 N acid required to neutralize residue from 10 cc. of fluid extract.	Weight of alkaloid calculated.	Percent (gm. in 100 cc.)
A.	2.55	0.0368 gm.	0.368
"	2.45	0.0353 "	0.353
"	2.45	0.0353 "	0.353
"	2.55	0.0368 "	0.368
"	2.525	0.0364 "	0.364
"	2.55	0.0368 "	0.368
"	2.45	0.0353 "	0.353
"	2.5	0.0361 "	0.361
			Average: 0.361 percent.
B.	2.5	0.0361 gm.	0.361
"	2.475	0.0357 "	0.357
"	2.55	0.0368 "	0.368
"	2.55	0.0368 "	0.368
"	2.5	0.0361 "	0.361
"	2.5	0.0361 "	0.361
"	2.525	0.0364 "	0.364
			Average: 0.363 percent.
C.	2.45	0.0353 gm.	0.353
"	2.5	0.0361 "	0.361
"	2.45	0.0353 "	0.353
"	2.45	0.0353 "	0.353
"	2.5	0.0361 "	0.361
"	2.475	0.0357 "	0.357
"	2.475	0.0357 "	0.357
			Average: 0.356 percent.

The average result obtained with each of the three methods is seen to be practically the same, the differences noted being far within the error of a titration and much less than duplicate determinations by any one method.

As far as the final result is concerned, the methods then are equal and we are at liberty to choose the one most simple in execution and requiring least expenditure in time and material. Considering the details of the methods, B is the only one containing any objectionable feature, this lying in the repeated decantation of the light, mobile and highly volatile chloroform-ether mixture and requiring some care and skill.

The working time for a determination by either method is the same, formation of emulsions does not occur and the time actually required, exclusive of the time required to evaporate the chloroform, need not exceed twenty to thirty minutes. Method C yields a residue most nearly colorless and is thus most accurately titrated, in conformity with which duplicate results by this method agree better than those according to A and B; the greatest variation in the volume of acid used to neutralize the alkaloidal residue of the former method is seen to be but 0.05 cc., while in A and B it is 0.1 cc. In C the first step of the assay requires 40 cc. of chloroform, while in A and B a mixture of chloroform 20 cc. and ether 80 cc. are used; C is therefore the more economical, if the solvent here used is thrown away, or, if it is recovered, C is still to be prefered as it is much easier to purify the chloroform than the chloroform-ether mixture used in A and B.

In the assay of the fluid extract by the several methods experiments were made showing that the use of more solvent in any of the three steps of which the assay is composed did not materially affect the yield of alkaloid. It remained to be shown if, when an extract containing a larger percent of active principle, is assayed by either of these methods, the entire quantity of alkaloid is obtained. Accordingly, a fluid extract of belladonna, known to considerably exceed the preceding one in alkaloidal content, was assayed according to B and C, the results of which are given below. A was omitted as this process was considered to have been found inferior to the other two, or at least as possessing no advantage over the former.

Method used.	Cc. of 1/20 N acid required to neutralize residue from 10 cc. of fl. ext.	Weight of alkaloid calculated.	Percent (gm. in 100 cc.)
B.	3.28	0.0473	0.473
C.	3.2	0.461	0.461

To ascertain the completeness of extraction, the following scheme was made use of. In method C, after the fluid extract had been exhausted with 40 cc. of chloroform, this chloroformic solution being treated in the usual way, the fluid extract was shaken with two further portions of chloroform of 10 cc. each, this chloroform was extracted with two portions, 10 cc. each, of 1 percent hydrochloric acid, the acid extract made alkaline, extracted with 10 and 10 cc. of chloroform, the latter evaporated in the usual way and titrated with 1/100 N acid. Next the chloroform solution of the regular assay, after having been exhausted with the usual amount of dilute acid, was shaken with two further portions of acid, 10 cc. each, this made alkaline, shaken with chloroform, two portions, 10 cc. each. This chloroformic extract was evaporated and titrated with 1/100 N acid as before. Again, the acid extract of the regular assay, after having been rendered alkaline and extracted with the usual volume of chloroform, was further extracted with two portions of chloroform, 10 cc. each, this collected separately, evaporated and titrated as before. In every case the residue was exceedingly small, the four residues obtained in this experiment, when united, required approximately 0.15 cc. of 1/100 N acid for neutralization.

Almost identical results were obtained when the degree of extraction in method B was investigated.

Equally complete extraction having been attained with B and C, the latter is to be preferred since it yields more concordant results, is simpler of execution and more economical.

Laboratory of The Searle & Hereth Co.

MONTHLY REVIEW.

Chemistry.

Cedar Leaf Oil.—Considerable confusion prevails in American markets in regard to this oil in consequence of the fact that several different conifers pass under the common name "cedar", the principal ones being *Juniperus virginiana* (Red cedar), *Thuja occidentalis* and *Chamaecyparis sphaeroidea* (both White cedars). Although in common usage a distinction between these so-called cedars is made, the distillers of cedar oil seem to ignore or not to be aware of, such differences, using the needles indiscriminately for distillation. A large sample of needles from one distiller seemed to consist of thuja leaves only, but the oil obtained from the specimen was not pure thuja oil. It is therefore no wonder that a considerable variation is constantly observed in the commercial oil of cedar leaves, as may be shown by the following comparison of six specimens of oil:—

Number of specimen.	Specific gravity.	Optical rotation.	Solubility in 70 percent alcohol.
1.	0.897	—12°25′	insoluble
2.	0.886	—3°40′	"
3.	0.887	—24°10′	"
4.	0.920	—10°25′	in 4 parts of alcohol
5.	0.918	—10°55′	" 5 " " "
6.	0.905	—10°0′	insoluble;

all these samples have a more or less strong odor of thuja.

In August 1894 some cedar leaf oil from the needles of *Juniperus virginiana*, collected fresh under control was distilled, and the difference of this oil and the commercial oils noticed. Its sp. gr. is 0.887, its opt. rot. +59°25′ and is insoluble in 16 parts of 80 percent alcohol. Its odor is pleasant, somewhat sweet. On fractionation, most of the oil passed over at 180°, and of this the greater part between 173° to 176°. The specific gravity of this fraction was 0.847, its optical rotation +80° (at 20°). When acted upon by bromine, a tetrabromide was readily obtained, melting at 104° to 105°, showing that this fraction consists of almost pure dextrogyrate limonene. Constituents of a lower boiling point were present in minute quantities suggestive of pinene. These yielded a nitrosochloride but no crystalline piperidine- and benzylamine compounds. The phellandrene test also failed. The presence of undetermined terpenes, such as are met with as companions of limonene in oil of lemon are surmised.

The fractions having a higher boiling point than limonene were treated with alcoholic potassa solution, as they contained small amounts of saponifiable constituents (saponification number of the original oil 10.9, acetylization number 39.1). The acids eliminated by this process rendered a silver

salt suggestive of valerianic acid. The oil freed from acid rendered when submitted to fractional distillation in vacuo and subsequently under ordinary pressure, a distillate passing over at 210° to 215°, which solidified on cooling and yielded borneol, melting at 203° to 204°, when expressed and sublimated. The part having the highest boiling point contains cadinene, readily indicated by its characteristic hydrochloride.

Accordingly, true cedar leaf oil consists mainly of limonene, cadinene, some borneol and small portions of bornyl esters.

True oil of cedar seems not to come into commerce, the common oil passing under this name is an indefinite distillate of miscellaneous coniferous needles including those of thuja. Red thuja oil, sometimes met with as "cedar oil," should more properly pass under the name of thuja oil.

[Report Schimmel & Co., Apr. '98, p. 14.] *E. K.*

Guajacum-wood Oil.—Information is received from a reliable party that this wood ("*Palo balsamo*") is derived from *Bulnesia Sarmienti* Lorentz. A description of this plant, belonging to the family *Zygophylleae* and growing wild in Argentina, was published by Grisebach in 1879.* It is a slender tree, 40 to 60 feet in height, having a dense, heavy resinous wood, and named by the aborigines "*palo santo*" (holy wood). This name (*lignum sanctum*) is also used for the wood of *Guajacum officinale* and *Guajacum sanctum*, and also for that of *Porlieria hygrometrica* Ruiz and Pavon, derived from a tree belonging to the family *Zygophylleae* and growing in Chili. The name seems also to be applied to the wood of *Caesalpinia melanocarpa* Gr., of Argentina, called there Guajacan or Quebracho.

Until further, more decisive evidence is obtained, the derivation of this wood from *Bulnesia Sarmienti* seems to be still undecided. It has never been offered to us under any other name than that of *Palo balsamo* or pokewood. Nor is there any mention made in the notes of the characteristic balsamic odor of the wood. [Report S. & Co., Apr. '96, p. 28.] *E. K.*

The Geraniol Controversy.—The long prevailing uncertainty in regard to the principal constituents of the fluid part of oil of rose has finally been settled. It is now generally agreed to consist of the two alcohols $C_{10}H_{18}O$ and $C_{10}H_{20}O$, the former constituting 75 percent of the oil. It has been settled that this alcohol ($C_{10}H_{18}O$) is identical with the geraniol obtained from palmarosa oil by Jacobsen in 1870, while the alcohol $C_{10}H_{20}O$ corresponds to that obtained by Dodge in 1890 by the reduction of citronellal and called by him citronellol.

In spite of these settled facts the so-called rose oil problem still remains in dispute, inasmuch as a controversy in regard to the proper names of these alcohols is still going on. Most chemists prefer to retain for the alcohol $C_{10}H_{18}O$ the name of geraniol in recognition of the priority of the discovery

* Abhandl. d. Königl. Ges. der Wissensch. zu Göttingen, Bd. 24, p. 75.

by Jacobsen, while Barbier and Bouveault call it lemonol, and Erdmann and Huth, recently joined by Poleck, rhodinol.

Similar differences prevail in regard to a name for the alcohol $C_{10}H_{20}O$. Tiemann and Schmidt, who have shown its identity with Dodge's citronellol, have properly retained this name, but deem it pertinent to also retain for the lævogyrate modification of the alcohol contained in oil of rose the name rhodinol chosen by Eckart for the mixture of geraniol and citronellol which he at first believed to consist of a definite alcohol different from geraniol.

Messrs. Barbier and Bouveault also call the alcohol $C_{10}H_{20}O$ rhodinol and Messrs. Hesse and Naschold call it réunion on account of its presence in Réunion oil of geranium.

Our opinion in this matter remains unaltered. Geraniol is known since 1870, its properties have been correctly ascertained by its discoverer, Prof. Jacobsen; we therefore deem it but proper and right to retain the name chosen by him for the alcohol $C_{10}H_{18}O$ found in oil of roses and identical with geraniol.

Similar are the conditions in the case of the alcohol $C_{10}H_{20}O$, Dodge's priority being unquestioned. The name citronellol all the more deserves the preference, as it takes account of the relations of the alcohol to the earlier known compounds of citronellal and citronellic acid.

[Report S. & Co., Apr. '98, p. 40.] *E. K.*

Testing the Purity of Theobromine.—Maurice François directs as follows:—

1) 0.1 of the theobromine is dissolved in a mixture of one cc. of nitric acid and two cc. of water in a test tube, and ten cc. of a ten percent solution of silver nitrate are added. The solution becomes turbid. On warming the turbidity disappears and on cooling the previously warmed clear mixture, a considerable quantity of colorless needles separates out.

2) 0.1 of the theobromine is dissolved in a mixture of two cc. of water and one cc. of hydrochloric acid by the aid of heat in a small flask. Ten cc. of a saturated solution of bromine (free from sulphuric acid) are now added to the mixture and the weight of the flask and its contents is noted. The flask is then heated till the mixture becomes nearly colorless and water added to reestablish the original weight. The mixture after cooling colors the skin red. If two cc. of the mixture be mixed with one drop (exactly) of a five percent solution of ferrous sulphate and two or three drops of ammonia water, the mixture will assume an intense indigo-blue color.

3) 0.1 of the theobromine is dissolved in a mixture of two cc. of water and one cc. of hydrochloric acid by the aid of heat in a test tube and ten cc. of a decinormal solution of iodine in potassium iodide are added to the solution. A dense dark precipitate is formed. Allow the precipitate to sub-

side, then pour off about two-thirds of the supernatant liquid, add to the precipitate ten cc. of a ten percent solution of potassium iodide and heat the mixture to 80° C. till the precipitate is dissolved. On cooling, long, dark green crystals will be deposited (tetraiodide of theobromine of Jörgensen).

4) Upon ignition, theobromine should leave no residue and its solubility in ninety-five percent alcohol should not exceed 0.05 p. c.

[Journ. Pharm. Chim., 1898. p. 521.] *H. M. Gordin.*

The Iodine Compounds of the Thyroid Gland. — In an abstract by the author himself, R. Tambach summarizes his views on the chemistry of the iodine of the thyroid gland in the following manner:—

1. That the absolute iodine content of the thyroid gland (of the pig) is the same irrespective of the locality, but that the quantity of extractable iodo-albumen compound varies considerably with the time of the year as well as with the locality;

2. That the iodo-albumen compounds of the gland can be almost completely extracted with water;

3. Further, that the total iodine content is so distributed in the gland that about 96 p. c. can be precipitated in the form of albumen iodides with alcohol, acids, alkalies and other albumen-precipitating reagents, the remaining 4 p. c. being left in the filtrate. Of these, 2 p. c. are in a form soluble in water and acting generally as iodides, the other 2 p. c. being present also in a form soluble in water, but being at the same time in firmly combined form;

4. That the iodothyrin is not present in the gland in the free form;

5. That the iodo albumen compounds do not split off iodothyrin upon artificial gastric or pancreatic digestion, but break up into digestion products which hold the iodine in combinations similar to that in which it is contained in the mother substance itself;

6. That this splitting off of iodothyrin takes place only after the breaking down of the albumen molecule and that even then not all the iodine takes this form.

7. The iodine moreover is not contained in the iodoalbumen compounds in one combination only but in several, as is seen from the fact that only a part of it is obtained as iodothyrin by treatment with dilute acids etc. as stated in (3), while the remainder exists in the form of a peptone-like compound, soluble in water and poorer in iodine. The latter does not yield iodothyrin even upon treatment with 10 p. c. sulphuric acid or 5 p. c. sodium hydroxide solutions.

8. Finally that the therapeutic value of the fresh gland or its extracts e. g. thyraden (which has been duly demonstrated clinically) is in all probability not dependent upon the splitting off of iodothyrin and its subsequent resorption, but upon the resorption of the iodine containing digestion products above referred to. [Pharm. Centrh. 39, p. 374.] *F. J. Gaenslen.*

Literary.

Books and Pamphlets Received.

Verlag von Walter Moeschke—Leipzig. Der erste Chemieunterricht. Ein methodisches Schulbuch mit geordneten Denkübungen von Kurt Geissler. Ein Bd., pp. 77. 1898. M. 1.20.

Verlag von Friedrich Vieweg und Sohn — Braunschweig. Ausführliches Lehrbuch der pharmaceutischen Chemie. Bearbeitet von Dr. Ernst Schmidt, o. Professor der pharmaceutischen Chemie an der Universität Marburg. Vierte vermehrte Auflage. Erster Band: Anorganische Chemie. Ein Bd., pp. 1143, mit zahlreichen Holzstichen und einer farbigen Spectraltafel. 1898.

John Wiley & Sons — New York. A laboratory guide in qualitative chemical analysis. By H. L. Wells, Professor of Analytical Chemistry and Metallurgy in the Sheffield Scientific School of Yale University. One vol., pp. VII, 189. 1898.

—— A short course in inorganic qualitative analysis for engineering students. By Dr. J. S. C. Wells, Instructor in Analytical Chemistry, Columbia University. One vol., pp. VIII, 291. 1898.

—— A manual of quantitative chemical analysis. By E. F. Ladd, Professor of Chemistry in the North Dakota Agricultural College. One vol., pp. VI, 82. 1898.

Koloniaal Museum te Haarlem. 1) Bulletin, Mai 1898: Indigo door C. J. van Lookeren Campagne, pp. 20; 2) Bulletin, Juni 1898: Verslag over het jaar 1897, met Bijlagen, pp. 57.

Committee of Revision U. S. P.* — New York. Alkaloidal estimation. A bibliographical index of chemical research prepared from original literature for the Committee of Revision by Paul I. Murrill under the direction of Albert B. Prescott. One vol., pp. 58. 1898.

A. Tschirch — 1) Die Oxymethylanthrachinone und ihre Bedeutung für einige organische Abführmittel. Sonderabdruck aus d. Ber. d. d. Pharm. Gesellsch. Pamphlet, pp. 36. 2) Beiträge zur Kenntniss der Aloë von Gullow Pedersen, No. 27 der Untersuchungen über die Sekrete. Besonderer Ab-

* Dr. Chas. Rice, Chairman, c. o. Bellevue Hospital, New York City.

druck a. d. Arch. d. Pharm., Pamphlet, pp. 13. 3) Die Anwendung der vergleichenden Anatomie zur Lösung von Fragen der angewandten Pharmakognosie, pp. 7. 4) Das Kalken der Muskatnüsse, pp. 2. 5) Zur Kenntniss der Süssholzwurzel, pp. 5. 6) Erkennung gefälschten Opiums mittelst Roentgenstrahlen, p. 1. 7) Versuch einer Theorie der organischen Abführmittel, welche Oxymethylanthrachinone enthalten, pp. 7. Separatabdrücke a. d. Schweiz. Wochenschr. f. Chem. u. Pharm. 1897 und 1898.

Author—Philadelphia. Origin and detection of mucilage in plants. By Henry Kraemer. Reprint from Am. Journ. Pharm., pp. 7.

Author—Cincinnati. 1) Areca catechu; 2) Punica granatum: 3) Veratrum viride. By J. U. Lloyd. Reprints from Western Druggist 1897. pp. 8, 10 & 8 resp.

Reviews.

Meyer's Conversations Lexicon. Ein Nachschlagewerk des allgemeinen Wissens. Fünfte, gänzlich neu bearbeitete Auflage. Mit mehr als 11,000 Abbildungen im Text und auf 1114 Bildertafeln, Karten und Plänen. 18. Band. Ergänzungen und Nachträge. — Register. Ein Bd., pp. 1075. Verlag des Bibliographischen Institutes. Leipzig. 1898.

On page 34 of this volume it was stated that this standard encyclopaedia of the German literature after its completion would be perfected and brought up to date by a supplementary volume containing all the additional matter accumulated in the course of its preparation during the five years between the appearance of the first and of the concluding 17th volume. This supplementary issue has just been issued. It comprises 1075 pages and contains, besides a comprehensive alphabetic index serving to promptly find by references, every subject matter which could not be and is not indicated by the special title of each article, all the most recent additional information on the domains of the natural and applied sciences, of history, philosophy, statistics, biography, etc. Among subjects of special interest to our readers may be mentioned as instances of the comprehensiveness of the work: Arzneipflanzen, Blüthenbestäubung,

Blutserum Therapie, Brot, Chlor, Chlorsaures Kali durch electrolytische Darstellung, Diphteritis, Essigsäure, (Colonnenrectificirapparat), Gährung, Immunitaet, Indicatoren, Kulturpflanzen, Kunstbutter, Maltonweine, Milch, Opium, Ozon, Pflanzenanatomie, Phosphorescenz, Pilze, Röntgenstrahlen.

Other articles of much interest are: Nahrungsmittelchemiker, Kalisalzbergbau, Höhlen, Schutzimpfung, Tropenhygiene, Kaltwasserkuren, Geschütze, Bergbahnen, Fahrräder (bicycles) etc.

To general readers and friends of the German novel literature a comprehensive alphabetical list of writers who hide their identity behind pseudonymes is of interest and value.

The number of illustrations and of excellent chromos is as usual a large one. *Fr. H.*

Pflanzenphysiologische Abhandlungen von Ernst von Brücke, 1844—1862. I. Bluten des Rebstockes. II. Bewegungen der *Mimosa pudica*. III. Elementarorganismen. IV. Brennhaare von *Urtica*. Herausgegeben von A. Fischer. Ostwald's Klassiker der exacten Wissenschaften. No. 95. Ein Bd., mit 9 Textfiguren. Verlag von Wilhelm Engelmann, Leipzig. 1898. M. 1.40.

It is not altogether easy to recognize the full significance of immediate events, since it is only after the lapse of time that a perspective is furnished and things assume their just proportions. This is as true in matters scientific as in other things. Thus every scientist can look back upon certain contributions to his science and recognize their fundamental significance. These have frequently become unavailable to any large number of workers or only so through quotations made by other writers. It is to preserve and to place within the reach of the body of students such fundamental contributions that Ostwald's Classics of the Exact Sciences are published, a service hard to overestimate.

The last of the small number of such papers chosen from the realm of plant physiology are the above enumerated articles by Brücke. It is hardly the place here to comment on these researches, further than to commend the choice of the editor. It is to be hoped that a liberal number of such contributions may be chosen from this science which has furnished the subject-matter for a considerable body of remarkable scientific literature. *Rodney H. True.*

DIE VEGETATION DER ERDE. Sammlung pflanzengeographischer Monographien. Herausgegeben von Dr. A. Engler, Prof. der Botanik und Director des botan. Gartens in Berlin, und Dr. O. Drude, Prof. der Botanik und Director des botan. Gartens in Dresden.

Vol. 2. GRUNDZÜGE DER PFLANZENVERBREITUNG IN DEN KARPATHEN (*Outlines of the distribution of plants in the Carpathian Mountains*) von Dr. F. Pax, Prof. der Botanik und Director des botan. Gartens in Breslau. Ein Bd., pp. 269, mit 3 Heliogravuren, 9 Text-Illustrationen und 1 Karte. Verlag von Wilhelm Engelmann in Leipzig. 1898.

As stated on page 118 of this journal, 1896, Professors A. Engler and O. Drude have joined with one of the foremost botanical publishing houses in Germany in editing a series of special botanical works comprising when completed a graphic description of the flora of our globe, each volume treating of a special and natural geographical district. The first volume treated of the flora of the Spanish peninsula, the second one just issued of that of the extended Carpathian Mountain ranges between the lower Danube and the Theis and Dniester rivers.

Prof. Pax has made this comparatively remote but extensive and picturesque alpine domain a special study for a number of years, making annually botanical excursions through the various mountain ranges, belonging mainly to Hungary, partly to Galicia and Roumania. After having familiarized himself by personal visits from the year 1882 to 1897 with the flora of the Carpathian mountains and being in the posession of an herbarium of its plants comprising 11,000 specimens, the author has elaborated this second volume of "*The Vegetation of the Globe.*" He has succeeded in furnishing to botanical literature a work of high rank, comprehensive and thorough in every detail and masterly both in representing the subject matter in a most interesting way, and in diction and style.

The present volume, being only the first part of the book, contains the following chapters:

1. The historical records on the exploration of the flora of the Carpathian mountains. 2. A comprehensive enumeration of the respective literature. 3. Sketch of the physical geography of these mountains and of the physiognomy of their vegetation. 4. Climatic relations of the Carpathian mountains. 5—7. The characteristic

plant-formations of this mountainous region, of its low lands, as well as of its various elevations. 8. The influence of men upon vegetation. 9. The lines of demarkation and the various districts of the flora of the Carpathian mountains. 10. The relations of the flora of the Carpathian mountains to the adjoining floral regions. 11. Their development since the tertiary geological period as demonstrated by the present and by the fossil flora.

This brief account of the main chapters of the book indicates the order and the comprehensiveness of its contents. By its intrinsic value and interest it will at once command the attention and appreciation of botanists and of all interested in the vegetable embellishment of their respective as well as of the various countries of the globe. Print, illustrations and binding are of the usual excellence of the well known publishing firm. *Fr. H.*

AUSFÜHRLICHES LEHRBUCH DER PHARMACEUTISCHEN CHEMIE. Bearbeitet von Dr. Ernst Schmidt, o. Professor der pharmaceutischen Chemie und Director des pharmaceutischen Instituts der Universität Marburg. Erster Band: Anorganische Chemie. Vierte vermehrte Auflage. Ein Bd., pp. XXIV, 1143, mit zahlreichen Holzstichen und einer farbigen Spectraltafel. Verlag von Friedrich Vieweg und Sohn, Braunschweig. 1898.

At a time when some of the most prominent pharmaceutical professors at German universities taught pharmaceutical chemistry in accordance with the monograph style of treatment, it required no mean courage to come out boldly in favor of teaching pharmaceutical chemistry as chemistry. The older style which is still in vogue at many of our colleges of pharmacy, was chemical pharmacy. Pharmaceutical chemistry is nothing more nor less than chemistry, it is chemistry as it should be taught to pharmaceutical students. That the author's position has been fully vindicated since the appearance of the first edition in 1879 is shown not only by the importance the Pharmaceutical-chemical Institute at Marburg has attained under his able direction, but also by the success his book has met with. It has not only made its author favorably known in Germany but throughout the pharmaceutical world. In consequence the demand for the work has been so great that subscribers to the third edition have scarcely had time to get the two volumes bound after the completion of the second when they are surprised by the news that the first volume of the fourth edition is just out.

Whereas the rapid succession of editions is apt to make him who cannot afford to buy every new edition somewhat gloomy, the pharmacist, who realizes that a reasonable sum of money spent in good books is a very good investment, will welcome each edition as a valuable addition to his library. College and university libraries are certainly not complete without the most recent edition of this standard work on their shelves. Even the older editions by no means become valueless when superceded by the latest, for there is no work on the subject of pharmaceutical chemistry which reflects in an equal manner the progress made in this branch of science during the past twenty years.

Whereas we have only words of unrestricted praise for this masterpiece, we cannot help regretting that Professor Schmidt did not heed the request of one of his German colleagues in a review of the last edition. The book was intended primarily as a text-book for the student and as guide for the pharmaceutical practitioner. Whereas the former as a rule does not have the time to go deeper into the subject than this comprehensive work enables him to, the latter is usually not so favorably situated as to be able to consult original articles if the references were given. The work, however, has acquired a usefulness to the pharmaceutical investigator which the author should be persuaded to consider. For him references to the original are almost indispensable and it is to be hoped that the next edition may be abundantly supplied with such. The character of the contents are too well known to be described. Presswork and illustrations are of the usual excellency. After all, nothing surpasses the wood cut for the illustration of apparatus and utensils. We hope to be able soon to greet the second volume containing the organic chemistry. *E. K.*

SYLLABUS DER PFLANZENFAMILIEN. Eine Uebersicht über das gesammte Pflanzensystem mit Berücksichtigung der Medicinal und Nutzpflanzen von Dr. Adolf Engler. Zweite, umgearbeitete Ausgabe. Berlin. Verlag von Gebrüder Borntträger. 1898. Carton. M. 3.80.

This book is, as the name indicates, an outline of the work covered by Dr. Engler in his lectures to students on taxonomic and economic botany and gives special attention to plants medicinally or otherwise useful. It is intended also to serve as a guide to students when studying the plants found in the botanical garden. Since it is

intended, therefore, to be of use to the general student rather than to the specialist, the ground to be covered is wide and little of detailed information concerning special forms is included. Although not especially interesting as reading, this syllabus is calculated to be of greatest service to those who wish to follow the best taxonomic authorities when teaching in their work on the fundamental questions of plant relationship. Already Bentham and Hooker, once in possesion of the field, are forced aside to make way for the more modern views on systematics and in no small measure has this been brought about through the great influence exerted by Engler and Prantl's Die natürlichen Pflanzenfamilien, a monumental work now nearly completed. It has been for a long time desirable to use the system followed in this work, but the volumes in hand lend little aid to one desiring a general view. This syllabus presents the system followed in the Pflanzenfamilien and gives us perhaps in the best bird's-eye view now obtainable of the conclusions of modern taxonomists on the relation of the parts of the plant kingdom to each other.

The printer has done his work well, the choice of type aiding very materially in rendering reference easy. *Rodney H. True.*

ALLGEMEINE UND PHYSIKALISCHE CHEMIE von Dr. Max Rudolphi. No. 71 der Sammlung Goeschen. Ein Bd., pp. 113. G. J. Goeschen'sche Verlagshandlung, Leipzig. 1898. M. 0.80.

Many a pharmacist and physician who takes an interest in the recent developments of chemical science has, no doubt, felt that a certain evolution is in the course of progress which he has been unable to follow. It is not so much the host of new substances, but a change in the general view of looking at things chemical that tends to estrange him from the science that at one time was his favorite study. He may regret this, but he does not find the time and probably does not possess a sufficient knowledge of mathematics to work his way through the ponderous volumes of Ostwald's standard work.

In clear yet concise style the author discusses briefly the elements of general chemistry and then devotes a short chapter each to thermo-chemistry, photo-chemistry and electro-chemistry. An account is given in each division of the physico-chemical methods based upon the general principles which are discussed first.

The careful reading of this book will serve as an admirable review of the general principles of chemistry to those who five, ten or more

years ago gave up the systematic study of chemistry when they left college. This small volume may even do more for its reader. It may so interest its possessor that he will desire to attempt something more comprehensive. In either case it will more than repay the reader tenfold for the time spent. The price is so insignificant that it certainly should not prevent any one from at least attempting the experiment. *E. K.*

OTTO LUEGER'S LEXICON DER GESAMTEN TECHNIK und ihrer Hilfswissenschaften im Verein mit Fachgenossen herausgegeben. Sechster Band: Kupplungen bis Reibungen. Ein Bd., pp. 960, mit zahlreichen Abbildungen. Deutsche Verlags-Anstalt, Stuttgart. 1898. M. 25.00.

Every subscriber to this important work, who has followed its progress from part to part, from volume to volume for several years past, will have been glad to learn that its completion may now be expected in the near future. The manuscript is reported to be almost completely in the hands of the publisher, so that the exact dimensions of the work may be estimated with fair accuracy. It will be remembered that the work was originally intended to be complete in five volumes, but that the desire of the editor and his colaborers to furnish something complete made it necessary to add two more volumes. Then for a time it appeared impossible to press all of the material into seven volumes. However, by adding ten forms to volumes six and seven, the publisher expects to be able to include all of the manuscript without abridgement of the articles or elimination of primes. The expense of this addition will be borne by the publisher so that a change in the subscription price will not be necessary.

To those who are not yet familiar with the work it may not be amiss to repeat that this encyclopedia does not attempt to displace the ordinary encyclopedias, but supplements them. In an age in which matters industrial and technical are so all important, a work of this kind becomes almost a necessity as much to the general reader as to the engineer, the architect, the technical chemist and others whose duties are in the line of applied science. Inasmuch as the counsel of pharmacist and physician, especially in smaller communities, is frequently sought in matters municipal, this encyclopedic dictionary will frequently be found even more serviceable than a general encyclopedia. *E. K.*

Pharmaceutical Review.

VOLUME 16. SEPTEMBER, 1898. NUMBER 9.

Editorial.

One of the most successful meetings of the American Pharmaceutical Association convened last week at Baltimore. The right royal reception which was extended to the members of the association by the local pharmacists, practitioners as well as manufacturers and wholesale druggists, seemed to predict an unusual meeting from the very beginning. As the gathering broke up at the close of the week, everyone pronounced the third Baltimore meeting one of the most successful in the history of the association. The general attendance was very good, about six hundred persons having registered. Inasmuch as the association has held its recent meetings largely away from its old home east of the Alleghanies, the present session brought face to face a large number of older members who had not seen each other for several or even many years.

Not only was the general attendance good, but the attendance at the meetings of the sections was remarkable taking into consideration the high temperature that prevailed for several days. The sessions of each one of the three sections were full of interest as was

manifested not only by the good attendance already referred to, but also by the discussions which took place.

So well pleased was everyone with the meeting that the good-byes seemed to take the nature of as many *au revoirs*. This spirit is of the greatest importance to the association at the present time. May the wave of enthusiasm which was started at Baltimore last week be carried all over the country by those who attended and who now have left or are soon to leave for their respective homes in the various states represented.

The fiftieth anniversary meeting of the American Association for the Advancement of Science was held in Boston during the second last week of August. This city witnessed the birth of the association in 1847 and here its golden anniversary was celebrated by a large number of scientists and associates from all parts of the country. Whether this meeting was in every respect such as the occasion seemed to demand, is too early to state at this writing, for calm judgement can only be passed after the returns from the numerous sections are in. The gathering was a large one though the number of members present as well as the number of new members possibly did not come up to the sanguine expectations of some. Those present, however, seemed to get all possible enjoyment, intellectual as well as social, which such an anniversary meeting held in Boston could afford.

The principal work of the Association is accomplished by the sections. The two largest sections, viz. Section *C*, Chemistry, and Section *G*, Botany, are of special interest to the pharmacist. Section *C*, with which is closely affiliated the American Chemical Society, held joint sessions with the latter. A programme of more than eighty papers was disposed of in ten sessions, almost all of which were well attended. The papers were classified so that one session each was devoted to analytical chemistry, technical chemistry, organic chemistry, physical chemistry, physiological chemistry, etc. One of the most interesting sessions, viz. that on teaching of chemistry, was unfortunately cut short by an excursion. Although discussion was practically cut off in this unfortunate manner, it was demonstrated what could be done by the presentation of general topics. The remarks of Professor Remsen in particular on the teaching of organic chemistry,

although he claimed no originality for what he said, were exceedingly happy and full of his own personality. They were enjoyed by all present whether teachers or industrial chemists.

In another session, the one devoted to organic chemistry, Professor Jackson of Harvard admirably demonstrated the exceeding value of the general paper. He presented in an admirably concise manner the general results of twelve years of investigation by himself and students along one line. Although the individual paper is by no means to be rejected, the general paper should receive much more attention at such gatherings. At times we may admire the patience with which a large audience listens to a paper of uninteresting detail, but at times we may also cease to admire such long-suffering. That e. g. a mixed audience should listen dutybound for an hour to a paper too technical to be of general interest and not sufficiently detailed to be of special importance to the chemist, is asking altogether too much. What the association needs is a reasonable amount of healthy criticism. The mutual admiration which becomes apparent not infrequently and the consequent absence of criticism is not apt to be productive of the best results.

Wednesday being given over to various excursions, the chemists visited several of the larger mills and the Experiment Station for the purification of water at Lawrence. Friday, the association was the guest of Harvard University. The weather, from which so many had suffered during the first half of the week, had become delightful by Friday morning so that the day spent at Cambridge was ideal in every respect. Some of the chemists visited places of interest from an industrial point of view, but a large number went to the chemical laboratory where Professor Jackson briefly outlined the history of this institute, and then he and Professor Richards conducted the guests through the building explaining matters of interest. In the course of this inspection the writer was forcibly reminded of A. W. v. Hofmann's words which he used in his address at the unveiling of the Woehler statue in Goettingen in 1890: "Es kommt nicht auf den Käfig an. Die Frage ist, ob der Vogel, der darinnen sitzt, singen kann." During the afternoon papers on physiological interest were presented and discussed. In the evening the association was addressed by President Elliott on a very timely subject.

The Alkaloidal Value of Belladonna Leaves.

By *W. A. Puckner.*

It is well known that belladonna leaf varies widely in alkaloidal strength and that the pharmacopœial description in no way aids in the selection of a physiologically active drug, and it is to be hoped that at the next revision of the pharmacopœia this state of affairs will be remedied by the adoption of a more definite description of a good specimen, if this be found possible, or else by the adoption of an alkaloidal standard.

To the many arguments advanced for and against such alkaloidal standardization I wish to add the results of a series of assays of commercial belladonna leaves which I believe will be the best possible argument in favor of an alkaloidal standard, as they will emphasize how great the difference in alkaloidal content may be in different specimens of the drug.

Gerrard[1] has studied the alkaloidal value of belladonna leaf grown under various conditions and finds that the leaf of the wild plant is to be preferred and that it should be collected when the plant is fully matured and that it then contains from 0.36 to 0.58 percent of alkaloid. Gerrard also finds that the fruit is fairly rich in active principle, thus, the seeds of a plant, the leaves of which contained 0.58 percent, were found to contain 0.34 percent.

Squibb[2] has remarked that in an entire bale of belladonna but a few leaves can be found that will correspond to the pharmocopœial description and that in buying the drug not a single word of the official description is of any use in selecting a good drug. He cautions against the selection of a drug consisting of large green leaves and in which no capsules are to be found, as having been harvested from cultivated plants when the leaves were most succulent but not most active. In six assays of powder of good quality from 0.26 to 0.34 percent of alkaloid were found and it is concluded that a good quality should contain at least 0.3 percent.

Kremel,[3] analysing belladonna gathered during July and bearing unripe fruit and a few blossoms, found the leaves to contain 0.70

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[1] Yearbook Pharm. 1881, p. 482; 1882, p. 400; 1884, p. 447. Proc. A. P. A., 30, p. 162; 31. p. 113; 32, p. 126.
[2] Ephemeris, 2, p. 849.
[3] Abstract, Era, 16, p. 663.

percent, the stems 0.16 percent and the unripe fruit 0.60 percent.[4]

Van der Wal[5] finds that the dry extract prepared from the leaves contains 1.691 percent of alkaloid, while one prepared from the flowers contains 2.170 percent.

The assays herewith submitted, confirming the above, were made upon samples taken from bales of leaf offered for purchase.

The parties submitting these goods were informed that the best quality of drug was desired and that purchase would depend upon the result of assay. The assay, according to a modification of Keller's process,[6] indicated:

1.	0.46	percent alkaloid.	11.	0.18	percent alkaloid.
2.	0.51	" "	12.	0.03	" "
3.	0.24	" "	13.	0.13	" "
4.	0.42	" "	14.	0.26	" "
5.	0.38	" "	15.	0.34	" "
6.	0.01	" "	16.	0.52	" "
7.	0.16	" "	17.	0.50	" "
8.	0.28	" "	18.	0.48	" "
9.	0.34	" "	19.	0.51	" "
10.	0.02	" "			

When, beginning with No. 6, epidemic like, nearly every specimen submitted was worthless, an order was given to an agent in Germany to forward a lot of wild leaf collected just before flowering and also one collected while in bloom. That collected before flowering is represented by No. 15, the other by No. 16; in both, as probably in all cases where belladonna leaf is referred to, the leaves and tops were collected. No. 16 also contained a considerable number of flowers. That the mature leaves are richer in alkaloid, is further demonstrated by Nos. 17, 18 and 19, which consisted of the leaves and tops and contained many seed capsules filled with well matured seeds. Nos. 1 and 2 were unfortunately powdered before they were submitted to me for assay, so that no conclusions can be drawn from these.

The following table shows the alkaloidal content of a number of

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[4] The abstract from which this is taken does not give the method of assay employed and the figures may signify the amount of crude alkaloid as obtained by weight and therefore too high, yet it shows that a mature plant, and seeds and stems as well as the leaves, is rich in alkaloid.

[5] Ned. Tijdschf. v. Phar., Nov. 1895.

[6] Pharm. Rev. 16, p. 180.

fluid extracts purchased in original containers and will also give an idea of the quality of drug in the market.

Number.	Standard claimed.	Alkaloid found.[7]
1.	.35 p. c. by acid titration.	.356 percent.
2.	.35 " " " "	.353 "
3.	none.	.313 "
4.	.35 p. c. by acid titration.	.401 "
5.	.4 p. c. natural alk. by weight.	.228 "
6.	none.	.156 "
7.	"	.149 "
8.	"	.173 "
9.	"	.288 "
10.	.35 p. c. by acid titration.	.360 "

It is seen that those fluid extracts for which a standard is claimed (.35 percent alkaloid by acid titration is the value commonly adopted) usually come up to it while the remaining fall below this figure. While the lower alkaloidal content of the un-assayed fluid extracts may be due to faulty methods of manufacture, it is far more probable that it is due to the drug used. No. 5 is seen to contain 0.288 percent according to my assay, while an alkaloidal strength of 0.4 percent is claimed for it; yet, this must not be taken as a willful misstatement, for it is stated to contain 0.4 percent of natural alkaloid by weight, whereby it is meant that the (impure) alkaloidal residue as extracted in the assay was weighed and from this the percent calculated, instead of calculating from the volume of volumetric acid required to neutralize the residue.

Of assays of belladonna leaves published elsewhere the following are noted:

Coblentz[8] reports the assay of four specimens, German, containing 0.212, 0.42, 0.18, 0.109 percent, and two English specimens with 0.422 and 0.411 percent of "purified alkaloid" by weight, or an average of 0.292 percent.

Lyons[9] reports 26 assays showing a variation of from 0.23 p. c. as the lowest to 0.87, the highest, or an average of 0.44 percent of alkaloid "by weight."

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[7] The figures given are the average result as obtained with method B and C, Pharm. Review 16, p. 303.
[8] Am. Druggist 1885, p. 187.
[9] Proc. A. P. A. 1886, 34, p. 110.

Thompson[10] reports twelve assays with a maximum of 0.5, a minimum of 0.27 and an average of 0.40 percent of total alkaloid by weight. He also mentions fifteen assays made in 1890 giving an average of .33 percent.

It is to be observed that the assays so far quoted all report the amount of alkaloid by weight, i. e. the alkaloid extracted from the drug by immiscible solvents is weighed, and that the results, compared with present method of assay, are much too high. In order to compare these assays with recent ones, based on acidimetric titration, a specimen of belladonna (No. 15), which according to my assay contained 0.34 percent of alkaloid, was assayed after the method used by Thompson; it assayed 0.46 percent and accordingly all assays quoted above should be reduced something like 25 percent.

Schwickerath[11] reports two specimens containing 0.34 and 0.37 percent by acid titration.

Beckhurst[12] finds three samples, to yield by acid titration, 0.486, 0.428 and 0.509 percent.

Keller[13] finds 0.38 and 0.40 percent of alkaloids.

Nagelvoort[14] reports upon 25 acidimetric determinations ranging from 0.2 to 0.58 percent and averaging 0.35 percent.

If, in view of the above, showing the extreme variation of belladonna leaf as found on the market, it be acceded that the adoption of an alkaloidal standard be desirable, then the question arises as to the value to be adopted. The mean of all assays of leaf quoted, good, bad and indifferent, will be about 0.3 percent and a lower standard should certainly not be adopted, and a requirement of 0.35 to 0.4 percent could easily be complied with. I would recommend that the leaves and tops, collected during or after flowering, be made official, as in this way by the presence of flowers or seed capsules the fully matured leaf may be recognized and distinguished from the young luxuriant leaves which have been found worthless.

Provisionally I also propose that belladonna leaves be required to contain from 0.35 to 0.40 percent of alkaloid, and that any belladonna leaf of a higher percentage may be brought within these limits by the mixture with belladonna leaf of a lower percentage, in

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[10] Proc. A. P. A. 1892, 40, p. 260.
[11] Pharm. Rundschau 1893, p. 282.
[12] Proc. A. P. A. 45, p. 535; from Pharm. Centralh. 1894, p. 566.
[13] Proc. A. Ph. A. 43, p. 241; from Schweiz. Wochenbl. f. Chem. u. Pharm. 1894.
[14] Bull. Pharm. 1895, 9, p. 204.

proper proportions. The recommendation is made provisionally, as it may be found that a leaf corresponding to the proposed description always contains a larger amount of alkaloid and that the standard may be raised above the proposed figure. It is the purpose of the writer to communicate with growers of and dealers in this drug, requesting specimens corresponding to the suggested description. The analysis of the specimens received will be published at a future date.

Standards for White and Black Mustard Seed.*

By *John Uri Lloyd.*

The work was undertaken solely with a view to establish a standard concerning starch in powdered black and white mustard seed. Although starch is not a constituent of ripe mustard seed, it has been found in commercial powdered mustard[1] and under conditions that preclude the idea of intentional admixture. The presence of starch-bearing weed seeds, and of scattered grains of wheat or of contaminations caused by using second hand sacks with adhering flour or meal, will account for such reactions. It is therefore desirable that a method should be found that will approximately indicate the proportion of starch.

Black Mustard Seed.

The ordinary method of detecting starch by adding U. S. P. Iodine Test Solution to the aqueous decoction fails with black mustard, on account of the ready absorption of iodine by the oil of mustard that is at once developed when black mustard comes in contact with water. This fact was pointed out[2] by the author in 1895.

If iodine solution is added, and much starch is present, a blue coloration is developed which remains for a short time only, then fades and disappears. A considerable excess of iodine, however, will effect a more permanent blue coloration, but affords no test concerning the proportion of starch.

* This investigation was undertaken under the auspices of the Research Committee of the American Pharmaceutical Association. Read at the Baltimore meeting of the Am. Pharm. Ass'n.

[1] Bulletin of Pharmacy, 11, p. 64.

[2] Proc. Am. Pharm. Assoc. 1895, pp. 194—199.

If small amounts of starch are present, iodine will show no blue color at all. Hence, the necessity of a rapid and convenient method by means of which a permanent starch reaction can be obtained, even when small quantities of starch are present.

Preliminary Work.—The idea of abstracting the disturbing element sinigrin, by means of solvents prior to the testing for starch, was soon abandoned as impracticable and hopeless. Then it was attempted to precipitate the sinigrin by means of the salts of heavy metals, such as silver nitrate, mercurous nitrate, or lead acetate, with no satisfaction.

By subsequent and prolonged experiments with copper sulphate, however, it was shown that this substance has the capacity of preventing the formation of oil of mustard, even when employed in as weak a solution as 0.2 percent. This reaction, however, is not new.

Acting upon this fact and carrying the principle further, we were enabled to arrive at several useful working methods for starch detection in mustard, among which those yielding the most satisfactory results are herein presented.

I. Iodine Method.

This method was suggested in our report[2] of 1895. It is easy of execution and rather sharp in reaction. We would suggest for it the following slightly modified directions:—

Put into a large test tube 1 gm. of the ground black mustard seed, add 10 cc. of water and 1 cc. of Iodine Test Solution U. S. P. Boil until the brown color has disappeared. Cool the liquid and add (by means of a pipette) one drop of Iodine Test Solution U. S. P., allowing it to flow down the side of the test tube and mix gradually with the upper part of the liquid. If as little as 0.1 percent of starch is present, a distinct and quite permanent blue or greenish blue layer appears in the upper part of the fluid, which by contrast is very perceptible.

II. Copper Methods.

A. *Copper Sulphate and Iodine.* Solutions:—1) Copper sulphate solution (0.2 percent). Dissolve 1 gm. of pure crystallized copper sulphate in water to make 500 cc. of solution.

2) Solution of Iodine (2 percent). Iodine Test Solution U. S. P.

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[4] P. Carles, Pharm. Jour. & Trans. [4], 6, p. 73.
[2] Proc. Am. Pharm. Assoc. 1895, pp. 194—199.

Directions:—Put 1 gm. of the powdered black mustard into a perfectly dry test tube, add 10 cc. of the (0.2 p. c.) copper solution and boil. No odor of mustard oil will be developed. Cool and add from one to three or four drops of iodine test solution, allowing it to flow down the side of the test tube, taking care to leave a layer of uniodized liquid below, in order that the contrast in color may be observed. The upper layer will turn blue if as little as 0.3 percent of starch is present.

Remarks:—The copper solution commended is sufficiently dilute to offer no interference with the color reaction on account of its own blue color. It was found that at no practical concentration (beginning at 2 p. c.) does the color of the copper solution interfere with the sensitiveness of the test. This strength (0.2 percent) is sufficient to prevent the formation of oil of mustard even upon boiling and we prefer it to more concentrated solutions.

By careful manipulation the presence of 0.2 p. c. of starch can be distinctly demonstrated by this test. Yet from 0.3 p. c. upward the starch test by this method is exceedingly plain and quite permanent. An excess of iodine will cause the precipitate to become green, which must be especially borne in mind when testing for small quantities of starch.

B. Copper Sulphate and Potassium Iodide. Solutions:—1) Copper sulphate solution (0.4 percent). Dissolve 4 gms. of pure crystallized copper sulphate in water to make 1000 cc.

2) Potassium iodide solution (5 percent). 5 gms. of crystallized pure potassium iodide are dissolved in water to make 100 cc.

Directions:—Put 1 gm. of the powdered black mustard seed into a perfectly dry test tube, add 10 cc. of the copper solution and boil. Cool and carefully add by means of a burette about one half cubic centimeter of the above solution of potassium iodide. After a short time, an exceedingly plain and decidedly permanent starch reaction will be developed near the bottom of the tube in the presence of as little as 0.3 p. c. starch.

Remarks:—This test is based on the interesting reaction that takes place when copper sulphate and potassium iodide are brought in contact. Insoluble white cuprous iodide is formed and iodine is liberated according to the following equation:—

$$2CuSO_4 + 4KI = 2K_2SO_4 + Cu_2I_2 + I_2.$$

The iodine liberated produces the starch reaction.

Yet, the chemical reaction does not take place in too dilute solutions. The concentration of the liquids and probably other factors influence the speed and completeness of the reaction.

The above named proportions gave the most satisfactory results and were established by a lengthy series of experimentation.

III. Potassium Iodide Method.

It was found during experimentation with the foregoing test that on boiling powdered mustard seed with potassium iodide solution, the formation of mustard oil is likewise entirely avoided. The idea that potassium iodide be used in the place of copper sulphate in the same manner as in the test II. A. then suggested itself. On testing the boiled liquid, after cooling, with iodine U. S. P. test solution, the result proved to be eminently satisfactory. To such an extent is this method in our favor that we now give it the preference over all others in the testing of powdered black mustard seed for starch.

Solutions:—1) Potassium Iodide Solution (5 percent). 5 gms. of crystallized pure potassium iodide are dissolved in water to make 100 cc.

2) Iodine test solution U. S. P. (2 percent).

Directions:—Put 1 gm. of the powdered black mustard seed into a perfectly dry test tube; add 10 cc. of the above potassium iodide solution and boil. Cool, and carefully add to the surface of the bright yellow liquid from one to three drops of iodine test solution U. S. P., taking care in mixing with the iodine to allow it to flow down the side of the tube, upon the surface of the liquid. The contrast in color between the iodized part and the lower liquid is very striking and is plainly visible with as little as 0.1 p. c. of starch.

Remarks:—The blue coloration by this method is perhaps not quite as permanent as in the copper experiments, yet it is sufficiently characteristic at the time of its formation and for a reasonable time afterwards.

Summary for Black Mustard Seed:—1) Four methods have been indicated which we submit. As before stated, the potassium iodide test (Test III.) seems to us to be preferable.

2) The potassium iodide test (Test III.) indicates the presence of 2 p. c. of starch with all certainty, and of 0.1 p. c. by closely observing the contrast in color.

3) Hence the following recommendation is made:—

a) If not more than 1 p. c. of starch (in the form of starch-bearing seeds, etc.) is considered admissible in black mustard of commerce, the Pharmacopœia should demand that:—

When mixed thoroughly with nine times its weight of powdered black mustard seed previously ascertained to be free from starch, the mixture, if submitted, in the quantity of one gramme to the test indicated under Test III., should not give a plain blue starch reaction.

b) If it is desirable to make the pharmacopœial limit lower than one percent of starch, a correspondingly smaller amount of starch-free mustard seed should be added.

c) If pure black mustard free from starch is demanded by the U. S. P. when submitted to Test III., it should show no blue reaction.

White Mustard Seed.

The odor of oil of mustard (allyl mustard oil) is not developed when powdered white mustard is boiled with water, a fact which the researches of Dr. Gadamer[3] and his predecessors sufficiently explain. Yet, with powdered white mustard seed containing starch, the starch-iodine color also disappears, but less rapidly than it does with black mustard seed.

Fortunately, we find that the use of solution of iodide of potassium with white mustard likewise checks the evanescence of the starch reaction when it is employed in the manner directed for black mustard seed under Test III. Indeed, when applied to white mustard seed, the test is even more sensitive by far than with black mustard, for by means of it we can detect the presence of as little as 0.05 p. c. starch with certainty.

Testing White Mustard for Starch. Solutions:—1) Potassium iodide solution (5 percent). 5 gms. of crystallized pure potassium iodide are dissolved in water to make 100 cc.

2) Iodine test solution U. S. P. (2 percent).

Directions:—Put 1 gm. of the powdered white mustard seed into a perfectly dry test tube, add 10 cc. of the above potassium iodide solution and boil. Cool and carefully add to the surface of the bright yellowish liquid one drop of iodine test solution U. S. P., taking care in adding iodine to allow it to flow down the side of the tube, upon the surface of the liquid. The contrast in color between the

[3] Dr. J. Gadamer, Ueber die Bestandtheile des schwarzen und des weissen Senfsamens. Archiv der Pharmazie, 235, pp. 44—114.

iodized upper part and the lower liquid is plainly visible with as little as 0.05 p. c. starch, in which case the coloration of the upper part is decidedly bluish and is permanent for a reasonable length of time.

Summary for Powdered White Mustard Seed. — a) If not more than 1 p. c. of starch (in the form of starch-bearing seeds, etc.) is considered admissible in white mustard of commerce, the Pharmacopœia should demand that:

The sample be mixed thoroughly with twenty-four times its weight of powdered white mustard seed previously ascertained to be free from starch, the mixture, if submitted, in the quantity of one gramme to the test indicated under white mustard, should not give a plain blue starch reaction.

b) If a lower limit is desired by the Pharmacopœia, a correspondingly smaller amount of starch-free white mustard seed should be employed in making the dilution.

c) If pure white mustard free from starch is demanded by the U. S. P., it should show no bluish coloration whatever when submitted to the same test.

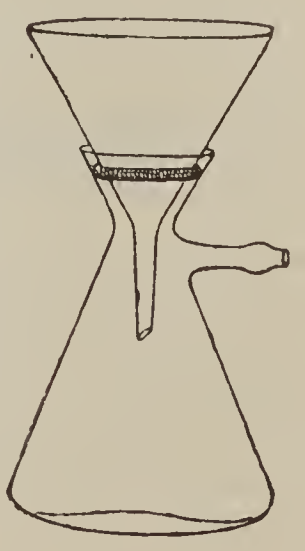
In conclusion, the author extends sincere thanks to Dr. Sigmond Waldbott, Librarian of the Lloyd Library, for detailed assistance both in experimentation and in literary research.

MONTHLY REVIEW.

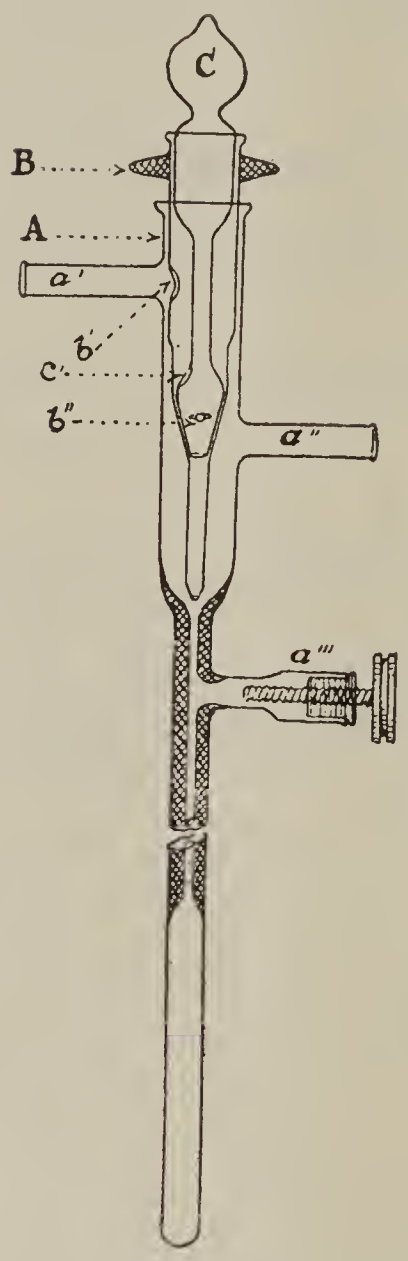
Pharmaceutical Technique.

A New Forcefilter Flask.—The flasks commonly in use have the disadvantage that different rubber stoppers are necessary for different sized funnels. This involves the matter of time and expense. This disadvantage is removed by a modification in the old flask suggested by Walther, which becomes apparent by the accompanying cut. A single rubber ring takes the place of an assortment of rubber stoppers and the funnel can be removed without difficulty. The new flasks are manufactured by Greiner and Friedrichs of Stuetzerbach in Thuringia.

E. K.



A New Thermo-Regulator. — The Reichert's thermo-regulator, as commonly made, is far from being satisfactory. The small opening which allows a minimum flow of gas sufficient to keep the light burning is, as a rule, entirely too large, consequently, for certain purposes, the minimum flame of such a regulator is still too large and gives therefore more heat than is necessary. This objection is recognized by many makers of instruments, and several modifications have been devised to permit regulation of the minimum supply. Some of these modifications are unquestionably a distinct improvement upon the ordinary form. In some of these types, unfortunately, the weight of the rubber tubing attached to the inflow tube will cause this to move more or less, and thus will alter the minimum supply of gas. The slender inflow tube is very liable to break in making connections or otherwise. It is well known, moreover, that the average thermo-regulator cannot be used for high temperature (150° C.) as well as for low temperature (30° C.). It is necessary to have two regulators, one for high and the other for low temperatures.



The thermo-regulator constructed by F. G. Novy can be used for high as well as low temperatures. This is due to the large inflow and outflow tubes, so that a minimum resistance is offered to the flow of gas. Moreover, as will be understood from the description, the maximum inflow of gas can be regulated by turning more or less the part marked *B*. The minimum outflow of gas in like manner is regulated by turning the part marked *C*. It will be observed, furthermore, that the rubber tubing is attached to strong lateral tubes which are independent of the regulating portion proper.

The diagram illustrates the construction of the regulator. Part *A* is provided with two lateral tubes which have an internal diameter of 6 mm. and has a ground internal surface. Part *B* is ground to fit the preceding. It is provided with an opening (*b'*) through which the gas passes into the interior. The lower portion of *B*, opposite the outflow tube, is ground on the inside and has a small opening 1 mm. in diameter (*b''*). The neck above is likewise ground internally. The lower portion of tube *B* has an internal diameter of 2 mm. and when placed in position, inside of part *A*, it should come within one or two millimeters of the bottom of the cup. In this case the first droplet of mercury, as it is issued from below, shuts off the outflow

of gas. This is an important condition, and should be carefully seen to in the manufacture of a good regulator.

The upper part of part *C* is solid, whereas the lower portion is hollow. The gas enters through a large opening (*c'*) and passes down to *b''*, the minimum outflow, and through the narrow tube and out at *a''*. The lower portion of *C* is ground to fit exactly the corresponding part in *B*. The upper portion of *C* is a ground stopper fitting into *B*.

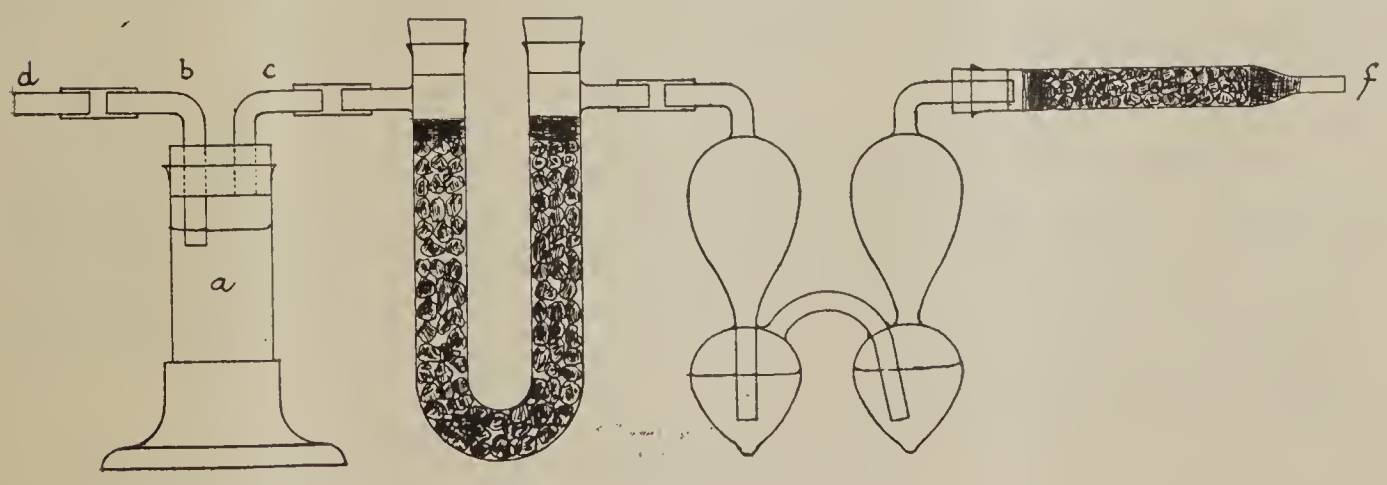
The manipulation of the thermo-regulator is very simple. The gas enters through the upper lateral tube. If it is desired to diminish the inflow of gas, this can be done by turning *B*. The gas passes through *b'* into the inner space and leaves at *c'*. As stated above, the gas goes down, and a portion leaves through the minimum supply opening *b''*, while the remainder passes down and out at *a''*. By turning part *C*, the minimum outflow of gas can be regulated at will.

The regulator works exceedingly well, especially when connected with Murrill's gas-pressure regulator. [Journ. of appl. Micr. 1, p. 91.] *E. K.*

Test for Albumen in Urine.—The following two tests—one a qualitative test for albumen in urine, the other a quantitative test for sugar—were lately proposed by Wm. C. Alpers in a paper presented at the last meeting of the New York State Pharmaceutical Association.

The test for albumen consists in the use of mercury succinide. The suspected urine is acidulated with hydrochloric acid, and an equal quantity of a one percent solution of mercury succinide added, when, at the presence of albumen, the well-known cloudiness will soon appear. This test is so sensitive that the presence of one part of albumen in 150,000 can be detected by it.

For the quantitive test for sugar the following apparatus is constructed: A test-tube (*a*) on a foot, holding 50 to 60 cc., is provided with a rubber stopper with two perforations; through one perforation a bent glass tube (*b*) is put so that its lower end projects about an inch from the stopper thus reaching into the fluid to be examined. Through the other perforation a similar glass tube (*c*) is put whose lower end is even with the stopper. A quantity of urine is weighed into the apparatus, a piece of yeast added,



and the stopper put on. The outlet at *d* is closed and the tube *c* connected with a calcium chloride tube and potash bulbs, such as are used in combustion analysis. The potash bulbs are weighed beforehand.

Fermentation soon begins and the carbon dioxide, generated by it, rises in the tube and passes through *c* into the calcium tube and potash bulbs. After the reaction ceases (about 8 to 10 hours), the tube *b* is carefully pulled up until its lower end is just above the level of the liquid. Suction is then applied to the outer end *f* of the potash bulbs and the cap at *d* removed, so that a current of air will pass through the whole apparatus. Whatever carbon dioxide is still lingering in the apparatus is thus drawn into the potash bulbs, where it is dissolved, while all traces of moisture that may be carried along by the draft are absorbed in the calcium tube.

Finally the bulbs are weighed again, and the increase in weight is the amount of carbon dioxide generated by the fermentation. From this, the glucose can easily be calculated by the following argument:

$C_6H_{12}O_6$	=	$2C_2H_5OH$	+	$2CO_2$
Glucose (179.58)		Alcohol (91.80)		Carbon dioxide (87.78)

Each 87.78 parts of carbon dioxide represent, therefore, 179.58 parts of glucose or one part is the equivalent of 2.0458 parts of glucose. By multiplying the calculated weight of carbon dioxide, therefore, by 2.0458, the exact amount of glucose contained in the urine under examination can be ascertained. From this the percentage as well as the total amount of glucose passed in 24 hours can easily be calculated.

A number of experiments made with this apparatus with solutions of glucose of known strength showed that an almost absolute exactness is obtained.

Chemistry.

Storing of Indian Hemp.—Dr. Prain of the Royal Botanic Gardens at Calcutta has found after experimentation that Indian hemp is best preserved in perforated boxes, it retaining its narcotic properties for two or three years. When preserved in tin containers hermetically sealed, the water in the drug produced fermentation and a strong rancid odor is developed.

[Chem. & Drug., 52, p. 240.] *R. H. T.*

A Source of Error in Urine Analysis.—Thad. Walker reports upon a specimen of urine which gave a positive reaction with Fehling's solution, but failed to react with the fermentation test and other control tests for the detection of glucose. Further investigation showed that the reducing action was due to the presence of carbolic acid, having found its way into the urine from utero-vaginal douching.

[Harper Hospital Bul. 1898, p. 4.] *W. A. P.*

Testing of Milk Sugar. — Chas. H. La Wall and Robt. C. Pursel note that, while the U. S. P. requires that no brownish or blackish color be developed within 30 minutes when milk sugar is sprinkled on sulphuric acid, occasionally a sample is found which, although pure as indicated by polariscope reading, yet gives this color reaction. Experiments showed that if a mass of crystals of milk sugar, along with the string upon which this had formed, were powdered, this coloration was obtained in the test while, if the string was removed, no reaction took place. It is suggested that manufacturers substitute some fiber less carbonizable than that now used as nucleus for the crystals to form upon.

[Am. J. Pharm. 70, p. 343.] *W. A. P.*

Crude Caustic Soda sold in the Market as Caustic Potash. — Carl E. Smith reports the analysis of five samples bought as crude caustic potash which proved to be nothing but crude caustic soda. The following table indicates the composition of the samples, potassium found being calculated as potassium sulphate.

	A. Percent.	B. Percent.	C. Percent.	D. Percent.	E. Percent.
Sodium hydrate	65.9	82.8	71.6	87.0	85.2
" carbonate	4.75	5.3	3.18	3.7	3.18
" chloride	17.0	7.45	4.2	2.6	5.5
" sulphate	1.57	2.04	9.25	2.8	2.3
" silicate	0.58	0.33	0.4	0.13	0.55
Potassium sulphate	2.4	0.58	4.35	0.73	0.38
Water	7.0	3.4	6.4	4.7	2.5
Insol. matter	0.21	none	0.17	trace	trace

Full details of the methods of analysis employed are given by the author.

[Am. J. Pharm. 70, p. 392.] *W. A. P.*

On the Detection of Horse Meat by Courlay and Coremon's Method. — G. Cugini has examined into the causes of failure in the detection of horse flesh in meat products when using the methods of Courlay and Coremons.* He finds that if the meat under examination is at once treated with hot water that the glycogen present in horse meat is not extracted and therefore the iodine reaction of glycogen not obtained in the subsequent test. Good results were obtained when the finely divided meat was macerated with cold water for some time and later very gradually heated to boiling, the clear infusion then precipitated with alcohol, the precipitate collected on a filter, washed with alcohol and dissolved in little boiling water. This solution invariably gave the characteristic coloration with iodine when horse meat was present.

[Staz. sperim. agric. itil., 31, p. 139; from Chem. Centralbl. 1898, 2, p. 134.] *W. A. P.*

* Z. Nahrungsm. Hyg. Waar., 10, p. 173.

Tyrotoxicon in Cheese. — J. A. Wesener and W. L. Rossman being called upon to isolate tyrotoxicon from a specimen of cheese which, when partaken of, produced symptoms indicating this poison, adopted the following procedure: 4.5 pounds were broken up and macerated in 1300 cc. of water for 24 hours, filtered and shaken up with ether, the ether was allowed to separate and rejected. The aqueous solution was now made alkaline with sodium carbonate and again extracted with ether and this ethereal solution evaporated under diminished pressure. The residue contained beautiful needleshaped crystals, discernible with the naked eye, and when administered to a guinea-pig produced symptoms characteristic of the poison suspected. A portion of the cheese was also treated according to Kippenberger's method of extracting and separating vegetable alkaloids from ptomains* in order to verify or discredit the method. 1460 gms. of the cheese were macerated with 400 cc. of a 10 percent glycerin-tannate solution for 48 hours at 38° C. The mass was strained through a meat-press, the filtrate shaken with ether to remove the fat, after removing the ether the aqueous solution was made alkaline with sodium carbonate and again shaken with ether. The residue left behind when this ethereal solution was evaporated under diminished pressure contained no crystals and when dissolved in water and administered to a guinea-pig gave no results whatever. From this is inferred that Kippenberger's method does separate ptomains from vegetable alkaloids.

[Phila. Med. J. 1898, p. 1120.] *W. A. P.*

The Estimation of Alkaloids in Tinctures.—J. Katz offers a scheme for the determination of alkaloids in tinctures resembling that of Hilger,† in which all evaporation and use of heat is avoided. Twenty-five cc. of tincture, containing about 45 percent alcohol, are rendered alkaline with 1 cc. of a 33 p. c. sodium hydroxid solution, 50 cc. of ether added and shaken for 5 minutes. The heavier, aqueous solution is drawn off and the ethereal portion which now contains most of the alcohol and also some coloring matter, is shaken with 3 cc. of water to remove the coloring matter, the water being drawn off and added to the aqueous portion first separated. The aqueous portion is twice more extracted with 25 cc. of ether to which has been added 10 p. c. of alcohol, the ether solutions each are washed with 1.5 cc. of water and then added to the ethereal solution first obtained. The united ether solutions are dehydrated with 2 to 3 gms. of dried calcium sulphate, filtered into 50 cc. of water and titrated with 1/100 N acid, using iodoeosin as an indicator.

If alkaloids sparingly soluble in ether are to be determined, 25 cc. of the tincture are rendered alkaline with soda solution and shaken for 5 minutes with 30 cc. of a mixture of chloroform 1 part and ether 2 parts, the chloro-

* Zeitsch. f. Anal. Chem. 34, p. 294.
† Pharm. Ztg. 1893, p. 586.

orm-ether solution drawn off and washed with 3 cc. of a 30 p. c. sodium chlorid solution. The aqueous portion is twice more extracted with 15 cc. chloroform-ether, this being washed with 1.5 cc. of the salt solution and the assay finished as when ether was used.

Strongly alcoholic tinctures must be reduced to an alcoholic strength of 40 to 50 p. c. If the tincture contains chlorophyl or fat, this must be removed by diluting with an equal volume of water, acidulating with acid, shaking with talcum and filtering. Solid or dried extracts are to be dissolved in 40 to 50 cc. of 45 p. c. alcohol and this solution treated as when 25 cc. of tincture were used.

[Centralbl. 1898, 1, p. 1244; from Arch. d. Pharm. 236, p. 81.] *W. A. P.*

Some Derivatives of Tropine.—By treating tropine with monochloracetic acid, ethylene chlorhydrin and ethylene bromide, A. van Son obtained tropine betaine, tropine choline and tropine neurine.

1. Tropine betaine, $C_8H_{15}ON\begin{matrix}\diagup CH_2.CO_2H\\ \diagdown OH\end{matrix}$. On heating tropine with three times its weight monochloracetic acid to 130° C. for three hours, a colorless syrupy liquid is obtained, which is easily soluble in alcohol and in water and which with gold chloride gives a yellow crystalline precipitate melting at 223—224° C. Platinum chloride causes no precipitate in the aqueous solution, but after spontaneous evaporation star-shaped crystals are obtained melting at 227° C. The analysis of these double salts shows the body to be tropine betaine chloride which is formed according to the following equation: $C_8H_{15}ON+CH_2Cl.CO_2H=C_8H_{15}ON\begin{matrix}\diagup CH_2.CO_2H\\ \diagdown Cl\end{matrix}$.

2. Tropine choline $C_8H_{15}ON\begin{matrix}\diagup CH_2.CH_2.OH\\ \diagdown OH\end{matrix}$. This is obtained on heating tropine with ethylene chlorhydrin for three hours under pressure to 100° C. and precipitating the product with gold chloride or platinum chloride. The body formed is tropine choline chloride $C_8H_{15}ON+CH_2.OH.CH_2.Cl=$

$$C_8H_{15}ON\begin{matrix}\diagup CH_2.CH_2.Cl\\ \diagdown OH\end{matrix}.$$

3. Tropine neurine, $C_8H_{15}ON\begin{matrix}\diagup CH=CH_2\\ \diagdown OH\end{matrix}$. Tropine is heated with excess of ethylene bromide on a water bath under pressure for six hours, the excess of ethylene bromide is then driven off and the product recrystallized from absolute alcohol. The addition compound of tropine and ethylene bromide, $C_8H_{15}ON\begin{matrix}\diagup CH_2.CH_2Br\\ \diagdown Br\end{matrix}$, thus obtained is heated for one hour with silver oxide, filtered and precipitated with gold chloride or platinum chloride. The composition of these derivatives indicate that tropine neurine is formed,

$$C_8H_{15}ON\begin{matrix}\diagup CH_2.CH_2Br\\ \diagdown Br\end{matrix}+Ag_2O=C_8H_{15}ON\begin{matrix}\diagup CH=CH_2\\ \diagdown OH\end{matrix}+2AgBr.$$

[Pharm. Centrh., 1898, p. 247; from Arch. d. Pharm., 1898, p. 685.]
H. M. G.

Morphine-Quinoline-Ether.—According to the researches of Paul Cohn dichlorquinoline reacts upon morphine with elimination of hydrochloric acid, whereas codeine (methyl morphine) even on prolonged heating remains unaltered. From this the author draws the conclusion that the hydroxyl groups in both alkaloids have different functions and that that hydrogen atom, which in codeine is replaced by the methyl group, goes into reaction. The product of the reaction, the morphine ether, forms small acute white prisms melting at 158° C. Mineral acids easily dissolve the substance to form salts of a bitter taste. Unlike morphine it does not react with ferric-chloride or iodic acid. It forms a chromate, a tartrate and a platinum double salt. With bromine it gives a substitution compound and a periodide with iodine.

[Pharm. Centrh. 1898, p. 313; from Chem. Ztg., 1898, p. 227.] *H. M. G.*

Assay of Syrup of Iodide of Iron. Ralph S. Swinton criticises the various methods proposed for the assay of syrup of iodide of iron because, being based upon the precipitation of the iodide with silver, they do not distinguish between iodide and chloride or bromide which may be present as impurity. In the new British Pharmacopoeia a test is given for the assay of the syrup in which the iron is precipitated with sodium carbonate, the mixture filtered, the filtrate neutralized with nitric acid and titrated with silver nitrate, potassium chromate being used as indicator. He fears that this process will not be found satisfactory and would prefer that of the U. S. P., but as neither distinguishes between iodide and the other halogen acids he would recommend a direct estimation of iodine as follows: Dilute 10 cc. of the syrup with 90 cc. of water, and slowly mix 10 cc. of this solution with 5 cc. strong sulphuric acid, keeping the vessel cool by allowing a stream of cold water to flow over it. When nearly cold thoroughly agitate the mixture with 5 cc. of 90 percent. phenol, then with 25 cc. of a completely saturated bromine-water: remove the separated iodine by washing out with chloroform (two washings will usually suffice), treat the mixture again with phenol bromine, separate the iodine as before, and mix with the first portion. The whole chloroformic-iodine solution is now covered with a layer of water and titrated with sodium thiosulphate, starch paste being used as indicator. If due care is given to the complete saturation of the bromine water and to the thorough agitation of this bromine solution with the mixture, the results are said to be almost absolutely accurate. [Chemist and Druggist, 1898, 837. *W. A. P.*]

The Common Reagents for the Detection of Albuminuria: Their Application and Comparative Efficiency.—John Milton Garrat discusses the various tests for the detection of albumin in urine. He recognizes two methods of application—contact and diffusion. For either it is necessary that the urine should be perfectly clear. If simple filtration is insufficient, a

clear filtrate will be obtained by adding an excess of ammonium hydrate and then a solution of magnesium sulphate and ammonium chloride, the earthy phosphates so precipitated carrying down with them all other impurities.

A new form of apparatus for making the contact test with a minimum amount of diffusion is suggested, consisting of a U tube, the curved part of which is constricted to a diameter of 1/16 inch. In using the apparatus, one end is filled with urine and a finger placed over the top. The other arm, which should be longer, is then partially filled with the reagent, and the two liquids are allowed gradually to reach the same level.

Five reagents, nitric acid, Robert's solution, Millard's test, potassium ferrocyanide and heat, were tried upon specimens of urine from 50 cases of mild albuminuria and the results noted: With Millard's solution a reaction was obtained with 48 specimens; albumin could not be found in the other two by any other method, although in one casts were found in the sediment; with Robert's test a reaction was obtained in 43 cases; with potassium ferrocyanide in 36; with nitric acid in 30; and with heat in only 26. With experimental solutions of serum-albumin of 1 part in 320 all tests responded. With a solution of 1 part in 640, or in 1280, only Millard's test responded. [New York Med. J., 68, No. 3.] *W. A. P.*

Quinine Sulphate in America. — According to Mr. J. W. England, who has worked over the history of the manufacture of the sulphate of quinine in this country, it was first made for commercial purposes in 1823 in America, three years after its discovery in France by Pelletier and Caventou, by the Philadelphia firm, Farr and Kunzie, now Powers and Weightman. In 1824, George D. Rosengarten, founder of the firm Rosengarten & Son, Philadelphia, also prepared the drug. The first manufacture of this remedy in England was by Howards and Sons at Stratford about 1827. It was made in France at about this date.

From the very beginning, the enterprise in America was a success and the amount manufactured continually increased, as the country's development increased. New factors from time to time appeared. Originally and up to 1840, calisaya bark was the only bark used in the manufacture. It was brought to this country from Bolivia where it was a government monopoly. The only agents of the government were Alsop & Co. of New York, the foreign manufacturers coming to New York to buy their supplies of bark. When Equador and Columbia entered the market, calisaya bark fell in price from $1.75 per pound, its highest price, and New York at the same time ceased to be the center of the market for the world, these countries shipping the bark to Europe as well as to America.

In 1867, cinchona bark from the Indian plantations began to appear in the London market and in 1869 the first bark was exported from Ceylon. In this same year, the first shipment was made from Java. The great

significance of the supply of cinchona barks from the Orient has long since become generally recognized.

In the latter part of the 70's, changes took place which affected radically the quinine manufacture in this country. In the earlier days the French product was given preference in this country; this, however, eventually changed and the home product was preferred. In 1879, adverse legislation gave a hard blow to the industry, a law being enacted removing the import duty of 20 per cent hitherto exacted, placing quinine on the free list. In 1861, a duty of 20 per cent was placed on the sulphate and 10 per cent on the bark, figures in the same year increased to 30 per cent on the former and 15 per cent on the latter. Other changes followed at frequent intervals. As a result of all these factors, the quinine used in this country, finally came to be largely drawn from foreign sources, Germany notably. In 1897, 4,364,823 ounces quinine were imported, about 25 per cent of the amount used coming from home manufactories. Thus an industry that required years to build up, has fallen far short of its proper development.

Interesting and valuable tables showing the range of prices from 1823 to 1897 demanded for quinine, also one showing the importations of bark, quinine, cinchonidine and other cinchona products together with their value accompany this article. [Alumni Report, 34, p. 57.] *R. H. T.*

Chemical and Industrial Aspects of Volatile Oils. — The following is a continuation of earlier Articles by Duyk on the same subject*.

East Indian santal wood oil. Besides the known methods of examination, the author recommends the distillation in vacuum. Of pure oil 95.5 p. c. boil between 155° and 170° under 14 mm. pressure.

Oil of cloves. The critical solubility temperature (according to Crismer, Chem. Rev. Fett- und Harz-Ind. 1895.1; C. 95, II. 1059) of a good oil lies, when using a 50 p. c. alcohol, not above 120°, that of eugenol lies at 103°.

Oil of thyme. French thyme (*Thymus vulgaris*) is said to contain from 2 to 2½ p. c. of ethereal oil. The crude oil has a reddish color, the rectified oil is colorless. The latter has the following properties: density 0.890, index of refraction $[n]_0$=1.483, rotatory power +10—12°, boiling point 155 to 165°. Upon distillation, cymene, "thymene", thymol, carvacrol, and small quantities of borneol and linalool are said to come over in the order mentioned. To isolate the thymol the oil is treated with concentrated sodium hydroxide solution; the yellow thymolate is separated from the other substances, and then treated with an acid.

The commercial oil of thyme is almost always deprived of its thymol; a good article should contain 20 p. c. by weight of thymol. Adulteration with oil of turpentine can be detected with the polariscope.

* J. Pharm. Chim. [6] 4.491; C. 97, I. 165.

Oil of turpentine. Three varieties are known, the French, the English or American, and the Russian or Swedish, each of which has its peculiar properties.

	French (laevo).	English (dextro).	Russian (dextro).
Source.	*Pin. maritima. Pipinaster.*	*Pin. austral.*	*Pin. sylvestr. (Pin. Ledeburii.)*
Composition.	l-pinene.	d-pinene.	Sylvestrene and d-pinene.
$[\alpha]_D$	−60°	+14.55°	+32°
Sp. gr.	0.864—0.866	0.864 at 20°	0.860 at 20°
B. P.	156—163°	156—161°	161—180°

The officinal French oil is rarely adulterated. In a pure condition it does not show a blue fluoresence (petroleum).

Oil of juniper, from *Juniperus communis*, soluble in 10 parts of alcohol of 80 p. c. strength, consists almost exclusively of pinene and cadinene, a sesquiterpene.

Oil of savin, from *Juniperus sabina*, contains pinene and cadinene; density 0.91 to 0.94; soluble in 90 p. c. alcohol; $[\alpha]_D$= 40 to 50°.

Oil of rosemary, from *Rosmarinus officinalis*. The most highly prized oil is that from southern France. It is a colorless fluid, that rapidly oxidizes in the air; density 0.880 to 0.920; boiling point 150—168°; contains according to Bruylants large quantities of pinene, a mixture of laevo and dextro camphor, and a small quantity of borneol. It is frequently adulterated with turpentine and occasionally also with petroleum. The presence of these is easily discovered.

Oil of cedar, from *Juniperus virginiana*, is a yellowish liquid; density at 14.5° C. is 0.984; boiling point below 280°; the distillate consists mainly of cedrene. The fraction up to 295° contains an alcohol-like compound, which has been but little studied, but seems to be identical with santalol. The presence of this stearopten has not been proven in cedar leaves. According to Schimmel & Co. the coefficient of refraction of fresh oil of cedar is $\frac{N}{D}$=1.50567 at 17°, the thickened=1.51682. It is frequently added to oil of santal wood or even used as a substitute for the latter.

[Chem. Centr.-Bt., 65, pp. 513 and 783; from J. Pharm. Chim. [6] 7. pp. 74 and 190.] *Geo. W. Funck.*

Botany and Pharmacognosy.

Citrullus Colocynthis. — J. U. Lloyd gives a succinct account, with illustrations, of the outer morphology, of the plant yielding Colocynth. In this are included: (1) botanical description, habitat and cultivation; (2)

statistics; (3) history, constituents and uses; (4) pharmacopœial record; and (5) literature of *Citrullus colocynthis.*

[West. Drug., 1898, p. 243.] *H. K.*

Medicinal Plants of New Jersey. — This paper by H. H. Rusby, represents an attempt to enumerate with approximate completeness the more important medicinal plants of New Jersey, giving their distribution in the state, noting those which occur in the vicinity of Summit, where the New Jersey Pharmaceutical Association held its meeting on May 17th, 1898. No less than 83 of the plants recognized by the U. S. P. are found in this State. Some of the following notes are of interest.

The gross appearance of the rhizome of *Menispermum canadense* L. found in market, coming from Texas is so different from that collected hereabout, as to lead to the suspicion that careful study may determine these as distinct species.

It is probable that the Pharmacopœia is in error in directing that *Sanguinaria canadense* L. be "collected in the autumn. It flowers in earliest spring, matures its seed and perishes quickly, the remains of its aerial tissues disappearing rapidly. It is doubtful if any trace of its existence could be found in the autumn, so that to find and collect it at that season is probably impracticable.

The roots obtained from *Saponaria officinalis* L. have a totally different appearance from those which are imported.

Geranium maculatum L. is common and abundant and admirably adapted to collection for medicinal purposes.

Both *Rubus canadensis* L. and *R. villosus* Ait. are abundant throughout New Jersey. The author is of the opinion that the bark of the root of the former cannot be collected commercially, owing to mechanical difficulties, and favors its deletion from the official definition of the U. S. P.

Dr. Rusby finds two distinct types of bark of *Hamamelis virginiana* L. in market and thinks that possibly two species exist.

Sambucus canadensis L. is more poisonous than is generally supposed and its properties are worthy of investigation.

There is scarcely any other plant of the Pharmacopœia which is so much in need of study as the genus *Apocynum.* Upon the one hand we have abundant evidence that some preparations of the drug exert an important cardiac action, while others are inert, and upon the other the certainty that a number of species have been badly confounded.

Under the Mints the author notes that it would seem that the limestone region of North Jersey was especially adapted to the cultivation of peppermint.

[Drug. Circ., 1898, p. 129.] *H. K.*

A Species of Commelina. — Gilbert K. Preston has made a botanical and microscopical examination of a species of *Commelina* (either *C. nudiflora*

or *C. communis*), which is reported by a florist of Philadelphia to exhibit remarkable healing properties and when made into an ointment and applied to a surface wound it also stops bleeding. A previous investigator, G. L. Genz, had worked a few years before on material gathered in the same vicinity and found a principle which gave precipitates with alkaloidal reagents. The dry drug yielded Preston 15.33 per cent. of ash, consisting chiefly of potassium chloride and sulphate and a much smaller quantity of potassium carbonate; also calcium, magnesium, iron, phosphoric oxide, and siliceous matter. Neither tannic and gallic acids, nor any volatile acids were found; but there was obtained evidence in the watery extract of a substance having a reducing power on salts of gold and silver. Among other constituents found were starch, 0.48 per cent.; caoutchouc, 0.13 per cent.; wax, 0.48 per cent.; and fat, 0.95 per cent. After the exhaustion with petroleum ether and ether, the plant yielded 1.04 per cent. of matter to the solvent action of absolute alcohol. Water dissolved 84.97 per cent. of this extract. The aqueous solution had a slight acid reaction toward litmus paper. A portion of the solution acidified with dilute sulphuric acid gave a copious, red precipitate with Mayer's reagent; another portion prepared in the same manner yielded a copious reddish precipitate with potassium tri-iodide. Salts of silver and gold were reduced by still other portions of the aqueous solution of the alcoholic extract. Some of the same solution was agitated with benzin, ether and chloroform. The benzin and ether removed small quantities of matter from both acidified and alkaline solution. This matter dissolved in water gave neutral solutions which were without effect on salts of gold and silver; nor were alkaloids indicated in the solutions by use of Mayer's reagent or potassium tri-iodide. But Fehling's solution was reduced by the plain aqueous solutions and after heating portions of the solutions with acid and again applying this reagent, more copious oxide was precipitated. In another portion of the aqueous solution of the alcoholic extract there was evidence of 0.03 per cent. of glucose, but no saccharose was present. The author says that it has not been shown whether the substance which reduces the gold and silver salts and that which reacts somewhat like an alkaloid are identical or not and that it is still an open question as to what the plant owes its reputed medicinal effect. Under the botany the author has described more especially the inner morphology of the entire plant and this is illustrated with 9 figures. For this recourse must be had to the original. [Amer. Jour. Pharm., 1898, p. 321.] *H. K.*

Chemistry of Aloes.—According to A. R. L. Dohme, comparative assays of Socotrine, Curaçoa and Cape aloes, contain the following relative amounts of aloin: (M. P., 103° C.) Socotrine aloes, soft in monkey skins, 7½ percent average of 3 assays. (M. P., 110° C.) Curaçoa aloes, hard and livery and of a light chocolate color, 18.5 percent in 3 assays. (M. P., 107° C.) Cape

aloes, hard, glassy and black in color, 4½ percent average 3 assays. He further states that inasmuch as practically all the aloin in this country is made from Curaçoa aloes as it is in England from Barbadoes aloes, and we have all found that it is usually efficatious and produces the desired effects, we cannot but conclude in the face of the above assays that no reason exists, as far as we know, why we should not use Curaçoa aloes to the exclusion of the Socotrine, especially as it costs only about one-eighth as much.

The following summary includes the important points brought out in this paper:

1) That Curaçoa aloes is as efficient and, being much cheaper, should be used in preference to Socotrine aloes, the greater portion of which as sold to-day is made up anyway of Curaçoa aloes. 2) That the resin of aloes is an ester or organic salt and varies according to the kind of aloes, and that the varying constituent is the acid, the alcoholic constituent being aloresinotannol and being the same in both Barbadoes and Cape aloes, the only two thus far examined. 3) That aloin contains emodin, to which its laxative property is probably due. 4) That many laxative drugs, such as senna, cascara sagrada, rhubarb, buckthorn bark, besides aloes, owe their laxative property to this substance emodin or some substance like it, derived from anthraquinone, and homologous or isomeric with it. Work is now in progress to show the exact relation of anthraquinone to our well-known laxatives. [Amer. Jour. Pharm., 1898, p. 398.] *H. K.*

Structure of Gelsemium. — J. D. Seiberling has studied the inner morphology of fresh living specimens of the rhizome, roots and overground stem of *Gelsemium sempervirens* L. Pers. Certain new features characterizing the parts of this important plant have been set forth in this paper and may be summarized as follows:

Rhizome. Cork 18 to 20 cells; collenchyma wanting; parenchyma, containing oil, starch and crystals calcium oxalate; bast fibres; cambium; medullary rays; ducts and libriform tissue; internal phloem; hollow center eccentric.

Overground Stem. Cork 4 to 6 cells; collenchyma, 4 to 7 cells, containing chlorophyll; parenchyma, containing starch, oil and calcium oxalate crystals; bast fibres; cambium; medullary rays; ducts and libriform tissue; internal phloem; hollow center central.

Root. Cork 16 to 18 cells; collenchyma wanting; parenchyma, containing starch, oil and calcium oxalate crystals; bast fibres wanting; cambium; medullary rays; ducts and libriform tissue; internal phloem wanting; no hollow, but elements of primary fibro-vascular bundle in centre.

An extended bibliography compiled by Prof. J. U. Lloyd completes the article. [Amer. Jour. Pharm., 1898, p. 378.] *H. K.*

Note on Saffron.—In an article dealing with the adulteration of saffron, Henry Kraemer remarks that the commercial article is not so extensively adulterated as formerly. He calls attention to the prominent botanical characters distinguishing Crocus, Carthamus and Calendula and says that the most striking and characteristic test distinguishing crocus from its substitutes and adulterants is the use of concentrated sulphuric acid. The test may be made on a microscopic slide or in watch-crystal or in a test-tube. The greatest care must be exercised that the glass is clean and that the sulphuric acid is C. P. The acid is added to the saffron or substitute and the following are the characteristic color reactions brought out distinguishing crocus from carthamus and calendula:

Crocus.—The stigmas only become blue immediately, and in a half minute the solution becomes blue, gradually changing to a violet, and finely a deep wine-red color.

Carthamus.—The flowers turn yellow and the solution remains colorless for a few minutes. The latter changes to yellow, and finally, after a much longer time, however, assumes a color similar to crocus, viz., a deep wine-red color.

Calendula.—The flowers turn brown or blackish-brown, as though charred. The solution behaves otherwise much the same as carthamus.

This sulphuric acid test was probably first utilized by Joh. Müller (Archiv der Pharm. 1847. XL., p. 173) for distinguishing true saffron. In a paper on the adulteration of saffron he calls attention to the fact that, on the addition of sulphuric acid to *Crocus sativus* the latter changes to indigo-blue, reddish-purple and finally blackish-brown. Further, that the leaves of *Crocus vernus*, which is used to adulterate saffron, give a dark-green reaction with the same reagent.

Bouillon-Lagrange and Vogel (Annales de Chim., lxxx, p. 188), as early as 1811, had shown the peculiar behavior of the coloring principle in saffron to H_2SO_4, HNO_3, as later confirmed by Henry (Jour. de Pharm., 1821, p. 400), who says, in his essay on the coloring principle of saffron, "le chlore, les acides sufurique et nitrique se comportant avec elle comme MM. Bouillon-Lagrange et Vogel l'ont observé."

Since writing this article Professor True shows (Pharm. Rev. 1898, p. 258) that the saffron of the West contains calendula florets and some are loaded with inorganic substances. [Amer. Jour. Pharm., 1898, p. 386.] *H. K.*

The Common Dogbanes.—Dr. William Trelease has recently contrasted the two common species of *Apocynum* as follows:

In *A. cannabinum* the main stem is percunent, and the branches relatively short from the axils of large leaves, which, on both stem and branches, are ascending, and the greenish-white flowers with short, suberect corolla lobes are densely clustered in the upper axils. (Fig. I.)

Fig. I.

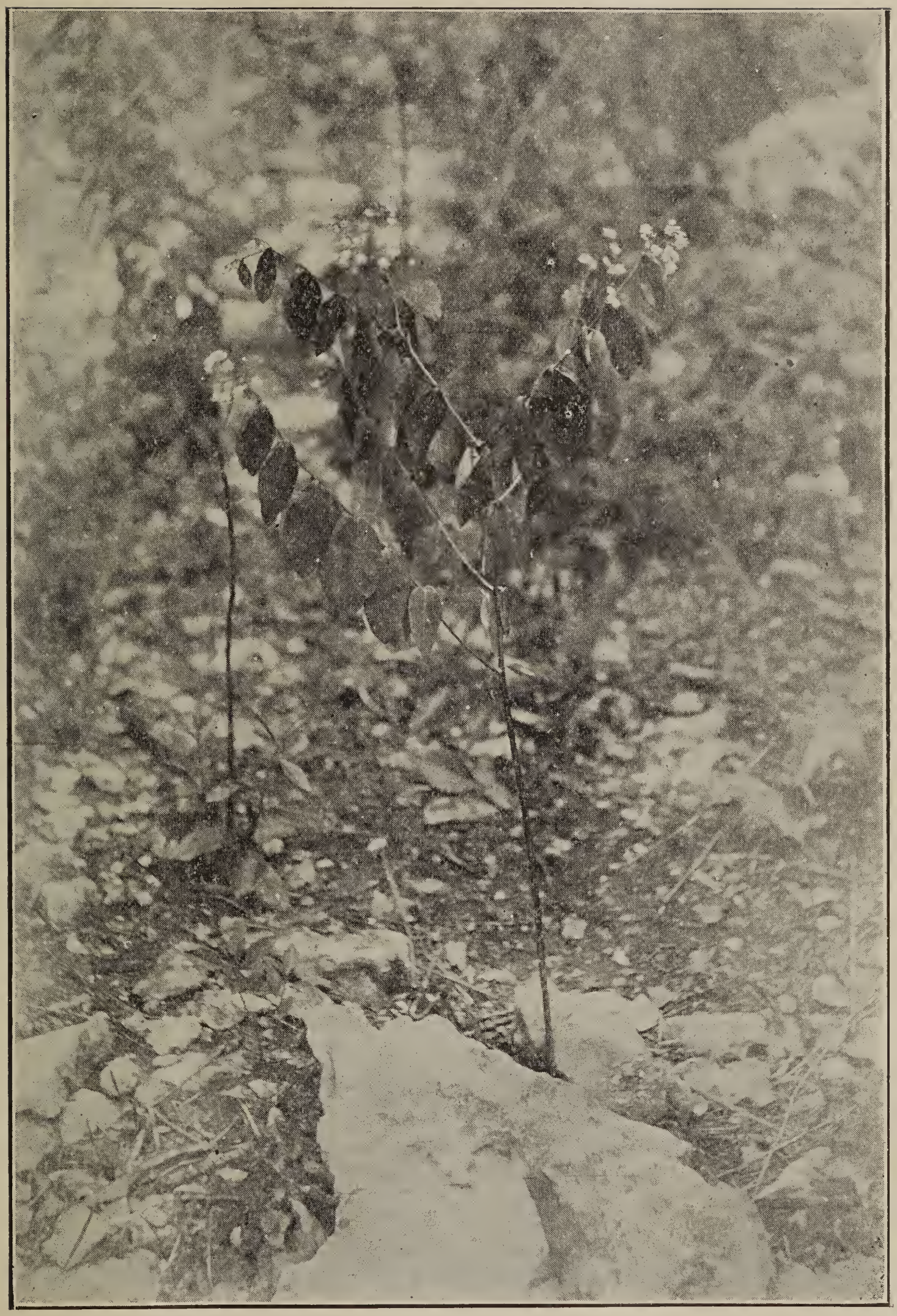


Fig. II.

In *A. androsaemifolium* the stem is more or less spirally dichotomous above, and even the lower branches are elongated and divergently ascending, the leaves of the main stem are relatively short and, like the larger ones of the branches, drooping or quite pendent, while the larger bell-shaped white or pinkish flowers with recurved segments are much more loosely clustered, forming more showy terminal cymes. (Fig. II.)

The former plant is the official Canadian hemp, the latter the dogsbane, formerly official but at present not so. The drugs derived from these plants are sometimes confused.

The Capsicums. — After a careful study of all the available forms of capsicums, both wild and cultivated, Mr. H. C. Irish concludes that but two species are to be detected, and about these are grouped an extended list of varieties.

The classification is based primarily on the shape of the fruit and the calyx characters.

Capsicum annuum L. furnishes all the leading commercial varieties now in cultivation. It is herbaceous, or suffrutescent, annual or biennial; seven varieties of this species are recognized.

Capsicum frutescens L. is a shrubby, perennial plant which ripens fruit freely only in tropical or subtropical latitudes and is not grown commercially in the north. The fruit is often called "bird pepper". But one variety, *baccatum*, is recognized.

For details as well as for the interesting introduction dealing with the history and uses of capsicums, the reader is referred to the original, which is freely illustrated by plates.

[Ninth Report Missouri Botanical Garden, 1898, p. 53.] *R. H. T.*

Yellow Coloring Matter of Bearberry Leaves.— Perkins found that the yellow coloring matter of the bearberry leaves has the formula $C_{15}H_{10}O_7$. It yields an acetyl derivative which melts at 190°. When fused with potash, phloroglucin and protocatechuic acid were obtained. In all these respects it resembles quercetin, but, unlike the latter, it forms deep green solutions with potassium hydroxide. The author first regarded this reaction as due to the presence of some impurity, but found that its behavior was unaltered after its regeneration from the sulphate and the acetyl derivative. Further, oxydation by means of potassium permanganate did not destroy the green coloration until complete decomposition of the coloring matter had occurred. A coloring matter having these properties has also been isolated from broach leaves. [Imp. Inst. Journ. 4, p. 203;

from Proc. Chem. Soc., 193, p. 104.] *E. K.*

A Probable New Volatile Alkaloid.—"In his report for 1897 the senior Cape analyst gives some particulars of a sample root which was used by a

"Kaffir" doctor and was alleged to have poisoned a native woman. The Government botanist declared it to be derived from a species of pelargonium. The taste of the drug seemed not unlike Cayenne pepper, and it had a similar effect on the nose. No toxic principle could be found, however, other than a light yellow volatile oil, which was driven off on heating the powdered root. There was too little of it to allow its nature being fully investigated, but it gave a basic reaction with litmus, and was precipitated by alkaloidal precipitants." It is to be hoped that a somewhat scientific investigation may soon supplement this unscientific attempt at plant analysis.

[Chem. & Dr. 53, p. 8.]

Coloring Matter of Borraginaceæ. — It is well known that a coloring matter is common in the roots of the *Borraginaceæ* and the substance is probably the same in all. It is known as alkannin and is a non-nitrogenous, resinous, purple coloring matter, soluble in oils, alcohol and ether, but not soluble in water. The common source of this dye is the root bark of *Alkanna tinctoria*, cultivated in Southern and Central Europe. In the old world alkannin occurs also in commercial quantities in *Arnebia*, *Echium*, *Symphytum*, *Onosma* and *Lithospermum*.

J. B. S. Norton has examined American species of this family and finds coloring matter present in greater or less quantity, especially in the roots, of the following plants: *Echium vulgare*, *Eritrichium glomeratum*, *Krynitzkia barbigna* (abundant in leaves), *K. californica* (slight), *K. maritima*, *K. micrantha*, *K. pterocarya*, *Lithospermum multiflorum*, *L. strictum*, *L. spathulatum*, *L. hirtum*, *L. canescens*, *L. angustifolium* (not abundant), *Plagiobothrys canescens* (in leaves), *P. nothofulvus* (in leaves), *P. tenellus*, *P. Arizonicus* (abundant in stem and leaves as well as root) and *P. Torreyi* (very abundant in some specimens, in others hardly a trace).

No analysis has been made of the coloring matter in American plants, but that of *Plagiobothrys* gives the characteristic reactions for resins and oils. Some economical use of this substance from American plants is suggested.

[Ninth Report of Missouri Botanical Garden, 1898, p. 149.] *R. H. T.*

Practical Pharmacy.

Coloring of Antiseptic Solutions. — The numerous accidents caused by mistaking colorless antiseptic solutions for harmless ones has led *Maurange* to recommend the addition of coloring matter to solutions of this kind. The following are proposed:

1. Corrosive sublimate with methyl violet (1:20); malachite green (1:100), *Nicholson* blue (1:100), or indigo carmine (1:100);
2. Phenol with fuchsine (1:100), eosine (1:100), safranine (1:10);
3. Mercurous oxycyanide with the same solutions as for mercuric

chloride or with one of the following: helienthine (1:20), aniline orange (1:20), fluorescine (1:20).

4. Silver nitrate with fluorescine. Indifferent solutions like those of boric acid, naphthol, etc., can be used without coloring, some antiseptics as copper sulphate, potassium permanganate, and lysol are strongly colored themselves. *Maurange* favors the use of the same color for all antiseptics, or at least for those rarely employed.

[Pharm. Centralh., 1898, p. 242.] *R. F.*

Sodium Phosphate Solution.—"Various formulas have been proposed for making solutions of sodium phosphate. The one most generally employed is that of W. C. Wescott, in which the sodium phosphate is held in solution by citric acid and sodium nitrate. Joseph W. England is of the opinion that part of the official sodium phosphate, or acid phosphate, is changed into sodium diacid phosphate, and sodium citrate, according to the following reaction:

$3Na_2HPO_4.12H_2O + H_3C_6H_5O_7.H_2O = 3NaH_2PO_4 + Na_3C_6H_5O_7 + 37H_2O$."

As there might be some objection to the sodium citrate formed, Mr. England proposes to overcome such objection by the use of the following formula:

Sodium phosphate, dried and powdered..... 3 oz. (Troy) 96 gr.
Acid phosphoric (50 per cent.).....1½ fl. oz. (921 gr.)
Water a sufficient quantity to make..... 8 fluid ounces.

Dissolve the soda in the water, which has had the acid previously added to it, and filter through paper.

Especial care should be taken to use the nearly anhydrous, dried and powdered, sodium phosphate, and not the granular salt with its 57 per cent. of water, or the resulting preparation will be excessively and dangerously acid. If desired the 85 per cent. acid, of the U. S. P. may be used, employing a proportionately less quantity (542 gr.). The 85 per cent acid should always be weighed and not measured, to insure greater accuracy.

The dose of this preparation of sodium phosphate is one to two teaspoonfuls in a wineglassful or more of water, preferably hot, three times a day before eating. If taken cold it may be made very acceptable by the addition of about ten grains of sodium carbonate.

As thus made, the solution of sodium phosphate is a clear, transparent faintly acid liquid, slightly heavier than official syrup, having a cooling, saline taste, mixing with water in all proportions, remaining liquid at ordinary temperature; each fluidram contains about thirty grains of anhydrous salts.

Mr. England believes that the following reaction takes place:

"$Na_2HPO_4 + H_3PO_4 = 2NaH_2PO_4$."

[Phil. Polyclinic, 7, p. 275.] *A. B. S.*

The Use of Granulated Opium in the Making of Tincture of Opium.— H. B. Kohl and L. E. Sayre call attention to the discussions which have appeared from time to time upon the superiority of granulated opium in the manufacture of the tincture of opium. The observations made are as follows:

"There are two good reasons for bringing into use the granulated opium for the preparation of the tincture; one is that the granulated opium is characterized by its simplicity and ease of manipulation, the process being as follows: Into the lower orifice of a cylindrical percolator place a plug of absorbent cotton, introduce the opium loosely, without previously moistening, then press it down and cover it with filter paper, held in place by a suitable weight. The desired menstruum can now be carefully poured on and after due maceration (which may vary from four to twelve hours) percolation may be allowed to proceed, the rate of outflow being so regulated as to exhaust the drug in the most thorough manner.

The second and best reason for the use of this form of the drug is to dispense with the use of precipitated calcium phosphate.

On examination of a number of samples of precipitated calcium phosphate obtained in the market, ammonium chloride was found in all.

It has been suggested that pumice be used in place of the precipitated calcium phosphate, but here the same objection arises. On examination of samples of pumice, chlorine was found to exist in the form of ammonium chloride and also the sodium salt."

Messrs. Kohl and Sayre performed several experiments which are expressed as follows:

No.	Process used.	Percentage morphine in drug.	Percentage morphine in tincture.	Percentage morphine lost.	Time allowed for maceration hours.	Time consumed in percolation days.
1.	U. S. P., 1890.....	14.521	1.243	2.091	12	8
2.	Granulated opium	14.521	1.433	0.191	4	1
3.	Granulated opium with talcum.....	14.521	1.312	1.401	12	2
4.	Granulated opium with pumice.....	14.521	1.241	2.111	12	4

They do not claim that this is conclusive, but ask that others follow the line of investigation indicated and report their results through the pharmaceutical press. [Drug. Cir., 42, p. 154.] *A. B. S.*

Credé's Silver Compounds. — In addition to the lactate and citrate of silver originated by Credé in 1896 as antiseptic media for the treatment of wounds, viz. actol and itrol (see Merck's Report 1896, pp. 21 and 91*), Credé has introduced last year a new silver preparation, viz. a certain form of

* See also this journal, vol. 15, pp. 36 and 56.

metallic silver which may appropriately be called colloidal silver or *argentum colloidale*, a chemical term which has already been in use for some time.

Credé's *argentum colloidale* consists of heavy greenish-black particles of metallic lustre, which when triturated with water form a greenish-black fluid. Diluted aqueous solutions are of a reddish-brown color. The preparation is also soluble in serous and albuminous animal fluids. These solutions are therefore adapted for being passed through the blood and hence through the whole body, so as to render the antiseptic power of the silver fully available. This silver preparation does not, like itrol, cause local reactions and is absolutely innocuous. It is best applied in the form of an ointment named "Credé's ointment." According to the statements of Credé (Münch. med. Wochenschr. 1897, No. 36, p. 1000), colloidal silver has so far been used in the treatment of septic diseases, such as lymphangitis, cellulitis, septicaemia, cellulitic angina, septic forms of disease occurring in scarlatina and diphtheria. In all these cases the results have been eminently satisfactory. The improvement appeared after from 5 to 30 hours and manifested itself by a visible improvement in the general condition of the patient, abatement of the fever and rapid recession of the septic processes. In the case of erysipelas the septic mixed infection was healed, but the affection of the skin persisted. The desired effect is obtained by rubbing, once or twice daily in the morning and evening, for 15 to 30 minutes. into a convenient part of the skin situated at a distance from the seat of the disease 3.0 grm. (gr. 48) of Credé's ointment in the case of adults, 2.0 (gr. 32) in that of semi-adults and 1.0 grm. (gr. 16) in that of infants.

Credé has also described and recommended in his paper entitled "Silber und Silbersalze als Antiseptica", Leipzig 1896, a gauze impregnated with metallic silver for dressing clean covered or flat wounds. In the opinion of R. von Jasinski (Therap. Wochenschr. 1896, No. 52, p. 1291; 1897, No. 10, p. 228) and v. Zajontschkowski (Berl. klin. Wochenschr. 1897, No. 6, p. 131) this gauze has not proved very satisfactory. Credé, on the other hand, (Therap. Wochenschr. 1897, No. 8, p. 178) and J. L. Beyer (Münch. med. Wochenschr. 1897, No. 11, p. 286) speak entirely in favor of this dressing.

The older silver salts introduced by Credé, viz. itrol and actol, have been discussed in a series of new papers, among which we may name: Tilger (Münch. med. Wochenschr. 1897, No. 6, p. 138), C. Meyer (Centralbl. für Chirurgie 1897, No. 3), Credé (ibid. No. 8), P. Postempski (Supplem. al Policlinico 1897, No. 37, p. 913), Cicognani (Sem. méd. 1897, No. 16, Annexe, p. LXII) and E. Marx (Bacteriol. Centralbl. 1897, Bd. XXI, p. 573). All these writers praise very highly the extraordinary antiseptic powers of itrol and actol, and Tilger expresses his conviction that the silver treatment of wounds is calculated to achieve the same results in private practice as the aseptic treatment, which he regards as almost unmanageable outside a hospital. Cicognani, who varies his solutions of actol and itrol from 1 p. c.

to 2 p. c., according to the nature of the disease, regards these substances as the best means for the treatment of chronic otorrhoea.

Credé gives the following general hints respecting the actol and itrol treatment: Itrol should be regarded as the wound antiseptic proper, which in the form of a powder is a certain means of keeping the wound sterile if dusted over as thinly as possible. Solutions of 1:4000 to 8000 are adapted for washing out cavities. Actol in the form of a powder is in a slight degree an irritant and should therefore only be used for powerful disinfecting solutions of 1:100 to 1:2000 or for the preparation of silver threads and drains. Aqueous solutions of these antiseptics are suitably made twice as concentrated as sublimate solutions. They possess then a similar sterilizing power, but not the disadvantages of sublimate. Besides the above named silver compounds the following are supplied for practical surgical purposes: Itrol-Tablettes of 0.1 grm. (about gr. 2) each, actol tablettes of 0.3 grm. (gr. 5) each, itrol sticks containing 2 p. c. itrol, as well as silver-silk, silver-catgut and silver-drains. [Merck's Report for 1897, p. 46.] *E. K.*

Physiology and Hygiene.

Starch-dissolving Power of Taka-diastase.—Strauss and Stargardt have submitted taka-diastase, the starch-dissolving ferment derived from the mould, *Aspergillus Oryzæ*, to an investigation relative to its dissolving properties under various conditions and have obtained results of considerable significance.

It was ascertained that with a neutral reaction, the ferment exerts on starch paste an intense and immediate change to sugar, an action which is entirely lacking in starch that has not been made into paste. In the presence of hydrochloric acid, the activity of this ferment is diminished, ceasing when a concentration of 0.11 p. c. is reached. In its resistance to acids in the medium, taka-diastase is but a little stronger than the ferment of saliva. In an acid medium having, therefore, the degree of acidity found in hyperacidity of the stomach, the starch-dissolving power of taka-diastase is not noticeably stronger than that of the salivary ferment.

Experiments made on patients suffering from hyperacidity showed results agreeing with the above laboratory results, an action on starch foods being found when administered fifteen minutes after the meal. No noticeable effect on any of the gastric functions could be seen. It acts very much in degree of efficiency as the salivary ferment.

It was thought possible that in the alkaline intestinal media, the taka-diastase might still survive and here assert itself, but it seems to have lost its starch-dissolving properties permanently in the stomach.

Experiment showed that taka-diastase may help digestion for a short time (less than 15 minutes) after taking food, before the acidity of the stomach has reached the degree of strength fatal to the ferment. This is a gain since the taka-diastase in no way injuring the salivary ferment, gives its effect added to that produced by the saliva.

[Therapeut. Monatsch. 12, p. 65.] *R. H. T.*

Leprosy in the United States.—Prof. Wm. Osler took occasion, in showing a case of leprosy in a clinical lecture, to speak in a general way of the prevalence of this disease and the prospects of its spreading. His statements are interesting in view of the rather sensational articles which have lately appeared.

Leprosy in the United States is decreasing. Including two districts in the Dominion of Canada there are five foci. In New Brunswick the lazeratto has 24 cases, about one-half the number existing in the early history of the disease. The settlement in British Columbia has eight cases and the disease is not spreading. Altogether 150 cases were known among the Scandinavian emigrants in Minnesota and Wisconsin. Minnesota now reports 27 cases. In California, the number of cases is not over 12, imported largely from China. The last and most extensive focus is in Louisiana. It is estimated that there are at least 300 cases in this state. A few isolated lepers are also to be found in the southern states and in the large cities.

While there can probably be no question as to the contageous nature of the disease, with one exception there is no record of its transmission from any of the imported cases to a native American.

Prof. Osler does not believe that there is danger of its spreading in this country nor would there be any serious danger from the annexation of Hawaii, where, on good authority, it is stated there is barely one percent of the population leprous.

The method of combating the disease is by segregation. In this way the number of lepers in Norway has been reduced since 1856 from 3000 to 700. This method should be insisted on in the United States.

[Bulletin of the Johns Hopkins Hospital, 1898, p. 47.] *W. D. Frost.*

Literary.

Reviews.

A Manual of Quantitative Chemical Analysis. By E. F. Ladd, Professor of Chemistry in the North Dakota Agricultural College. One vol., pp. vi, 82. John Wiley & Sons, New York. 1898.

In this volume of but eighty-two pages after an introduction of eight pages, there is a chapter on each, "Gravimetric Analysis",

"Volumetric Analysis", "Analysis of Ashes and Soils", Analysis of Ores", "Electrolysis", "Sugars, Starches and Foods", "Water Analysis", "Urine Analysis", with a "Table of the Elements" and an index.

The author's preface says: "This little manual is intended for the use of beginners in quantitative analysis." With the wisest choice of methods how is a beginner to "develop the reasoning power" by the use of a book which treats of so many subjects in so few pages? But many of the methods here given are not good, and will invariably lead to incorrect results. There seems to the reviewer no sufficient reason for placing this work before the public. An author should be held responsible for the correct treatment of his subject. Judged by this test the book is not a success. *W. W. Daniells.*

A Short Course in Inorganic Qualitative Analysis for Engineering Students. By Dr. J. S. C. Wells, Instructor in Analytical Chemistry, Columbia University. One vol., pp. viii, 291. John Wiley & Sons, New York. 1898.

The author says: "The object of this book is to give a short but thorough course in inorganic qualitative analysis for the use of students who have only a limited time to devote to the subject." The plan of the work is in general that of Fresenius modified somewhat in various details. Quite full explanatory notes and analytical schemes accompany the text, which also contains formulæ-equations for most of the reactions.

Altogether the book is an excellent one. Its publication will be warmly welcomed by teachers giving thorough instruction in qualitative analysis, who may wish a less extensive work than "Fresenius." *W. W. Daniells.*

Jahresbericht der Pharmacie, herausgegeben vom Deutschen Apothekerverein. Bearbeitet von Dr. Heinrich Beckurts, o. Professor d. pharm. Chem. u. Pharmakognosie an d. techn. Hochschule in Braunschweig, unter Mitwirkung von W. W. Weichelt, Korps-Stabsapotheker a. D. in Koblenz. 31. Jahrgang. 1896. Ein Bd., pp. vii, 910. 1898. M. 24.00.

When the German Chemical Society a year and a half ago dropped the "Referate" from its proceedings and placed the Chemisches Central-Blatt in their place, it took a step for which it cannot

be sufficiently praised. The further arrangement with the publishers of Beilstein's Handbuch der organischen Chemie was another step in the right direction of concentration of effort. As far as the catalogueing of abstracts of all branches of chemistry and the systematizing of facts of the organic branch is concerned, this science has reached an enviable position. Those who do not read German can find a good compilation of abstracts in the Journal of the Chemical Society. With journals like these the need of the old styled yearbook in general chemistry containing merely a catalogue of abstracts is not much felt. These journals supply the abstracts much sooner than the old styled yearbook and with a complete index are very satisfactory indeed. The principal development which yearbooks have undergone in recent years has, therefore, not been in the direction of completeness of abstracts, but in the supply of summaries, genuine "Jahresüberblicke", by specialists. Still further developments along this line are among the most striking needs of our time.

Pharmacy has so far accomplished little in this direction. We have at present our own Report on the progress of pharmacy, the British Yearbook and the German Jahresbericht, of which the last is the most complete and therefore the best. The Jahresbericht for 1896, which has recently been completed, contains 856 pages, whereas our Report on the progress of pharmacy from July 1, 1895 to June 30, 1896 comprises but 505 pages. In neither of these is any attempt made to give a connected summary of the progress made in the different departments of pharmaceutical science. In the American Pharmaceutical Association the complaint has been made that our Report is of value principally to the college professor. If we do not misinterpret the dissatisfaction of the publishers of the Jahresbericht, the failure of greater success than has been achieved by the German work may doubtless be attributed to a similar feeling on the other side of the ocean.

No one can appreciate the services of either the Jahresbericht or our Report more than the writer. On the other hand he feels equally keenly that our present annuals can be of little service to the average educated pharmaceutical practitioner. He requires a yearbook of a different character. It is a pity that pharmaceutical societies and journals cannot cooperate more fully so as to produce something of greater general value. Besides, a single editor cannot even do justice in his attempt to merely catalogue abstracts. However

much we may appreciate the herculean task of such a compilation as that before us, we cannot but feel disappointed to see some of the best work of our American scholars omitted whereas that of many of our tiros is included. It seems ridiculous indeed to find that the name of an investigator like Prescott is not even mentioned in the index of authors. Other names of good report are also conspicuous by their absence whereas the names of recent graduates appear to be numerous. One is almost inclined to think that the editor has picked out those articles that could be readily abstracted irrespective of their value. Furthermore, in the enumeration of journals consulted we find trade journals which seldom contain an original scientific article from one end of the year to the other. In some instances an abstract is accredited to a journal which had merely copied or abstracted the original, and not to the journal containing the original, although the latter is mentioned in the list of journals consulted.

In offering these criticisms, the writer desires to quote a sentence used a year ago in connection with the Jahresbericht: "To criticize does not necessarily mean to condemn." Even the Chem. Central-Blatt with its corps of abstractors can make ridiculous mistakes. Not long ago one of our American journals made a foolish mistake in abstracting an article from a German journal. The Apt.-Ztg. translated the mistake back into German and a specialist blindly copied the nonsense for the Central-Blatt. Mistakes will be made even with an organization that impresses us as being perfect. This is no reason, however, why we should not try to correct errors wherever we find them. It is only in this way that we can hope to attain that which is better. We may duly praise that which is praiseworthy and yet consistently point out where it might be improved in the future. Our American colleagues, we hope, will do all they can in support of the Jahresbericht. We can expect improvements only then if we support the good work done at present. Certainly every college library ought to subscribe to the Jahresbericht. It would be sadly deficient without it. *E. K.*

DER ERSTE CHEMIEUNTERRICHT. Ein methodisches Schulbuch mit geordneten Denkübungen von Kurt Geissler. Ein Bd., pp. x, 77. Verlag von Walter Moeschke, Leipzig. 1898. M. 1.20.

The reason why the fundamental natural sciences do not enjoy the same position in elementary courses of study as e. g. the dead

languages is, no doubt, to be found largely in the fact that as taught they have not the same disciplinary value. This again is due first of all very largely to the incompetency of the teachers. No Latin teacher e. g. will be appointed at a high school unless he has studied Latin for five or six years or more. Yet there are large numbers of teachers of physics, chemistry or biology who have not had more than a year's course in the sciences at our colleges or universities. Many teachers from the normal schools have had even less. Besides, the most competent natural scientists have been so engaged in research etc. that they have given but extremely little attention to methods of instruction.

Every rational attempt at an improvement in this direction is, therefore, worthy of our consideration. The author of the guide before us tries to adhere more rigidly than has been done before to the principle of proceeding from the known to the unknown, assuming nothing and not expecting the pupils to accept anything on faith. Aside from the chemical knowledge acquired, the pupil has the benefit of a rigidly logical discipline. Pharmaceutical apprentices, whose preceptors are in position to give assistance in carrying out the experiments, may well profit from such a course as is outlined in this guide. *E. K.*

LEHRBUCH DER BOTANIK FÜR HOCHSCHULEN von Dr. Edward Strasburger, Dr. Fritz Noll, Dr. Heinrich Schenck and Dr. A. F. W. Schimper. Dritte verbesserte Auflage mit 617 zum Theil farbigen Abbildungen. pp. 570. Verlag von Gustav Fischer, Jena. 1898. Broch. 7.50, geb. M. 8.50.

Probably no general text-book of botany since Sach's *Lehrbuch* has been so well received as that here under consideration. Edition has followed edition in rapid succession.

The authors, at the time of the first edition all members of the botanical faculty of the University of Bonn, have so divided the general field of botany among them as to place a specialist of international reputation in charge of each part. Morphology and anatomy are treated by Prof. Strasburger, physiology by Prof. Noll, the cryptogams by Prof. Schenck and the phanerogams by Prof. Schimper.

This division of labor has rendered it possible for each author to maintain his own individuality of method and still avoid a lack of

balance sometimes observed in joint works. In the present instance, proportion has been admirably preserved.

In an introduction to botany of the scope of the single volume before us, only the most important and best established facts and principles can find treatment and much that the special student of botany might wish can not find place. For the beginning student or for the general reader, the writer knows no work which presents the gist of modern botany in a better and more acceptable manner than the "Bonn" text-book. To the busy specialist who finds his time filled with work along particular lines, this book affords profitable matter for a spare hour.

The authors have incorporated into this edition a very useful bibliography including about 135 references to the most important articles in the various departments of the science.

This book is very attractive not only in the admirable treatment of the subject-matter but also by reason of the large number and excellent quality of its illustrations. Among others beyond criticism are the exquisite figures, in black and white, Fig. 470, *Jateorrhiza columba*, Fig. 536, *Hagenia abyssinica*, and Fig. 568, *Fraxinus Ornus*. A large number of colored figures illustrate plants interesting either because of poisonous or medical properties. In general, their quality is good and adds to the instructive value of the representations. The question of the value of the colored illustrations, especially in view of the remarkably low price of the work, can be answered in but one way.

This work deserves especial appreciation at the hands of pharmaceutical students, since medical plants have been given a very prominent place both in the text and among the illustrations.

Rodney H. True.

Die Flora des Brockens, gemalt und beschrieben von Franz Bley. Nebst einer naturhistorischen und geschichtlichen Skizze des Brockengebietes. Ein Bd., pp. 46, mit neun chromolithographischen Tafeln. Zweite Auflage. Verlag von Gebrüder Borntraeger, Berlin. 1898.

This attractive little volume of this well-known firm of botanical publishers is intended primarily for the popularization of the oecological conditions of that mountain in central Germany which acquired international fame with Goethe's Faust. It might as well be called

"The Story of the Brocken." That its flowers should occupy so important a position is due to perfectly natural causes. They are the strange biological expressions of a strange mountain. They are also the objects that tempt the wanderer most as souvenirs. To protect these strange children of the plant world against the ravages of the hundred-thousand visitors who annually climb the Brocken is certainly a worthy object, and we can but wish the author such success as he deserves. The book will prove a very pleasant souvenir to him who has been so fortunate as to climb this Hexenberg; it will also be of interest to him who, though less fortunate, makes an imaginary tour up the mountain guided by the text of the book while his imagination is assisted by the colored plates with its strange representatives of the Brocken flora.

E. K.

"Aus dem Harzland reckt der Brocken
Hoch empor sich trotzig-kühn,
Oft bestreut mit weissen Flocken,
Wenn es unten alles grün.

"Oft, den Blicken zu entschwinden,
Hüllt er sich in Nebel dicht;
Zwiesprach' hält er mit den Winden,
Und sehr friedlich klingt es nicht.

"Aber trotz des Sturmes Wüthen,
Der ihn ungestüm umschnaubt,
Schmückt ein Kranz von holden Blüthen
Um die Sommerzeit sein Haupt.

"Frühling, wenn er herrscht im Thale,
Wagt sich auch zu ihm hinauf;
All der Schnee, im Sonnenstrahle
Löst er sich zu Bächen auf.

"Aus dem Grund, dem quellig-kalten,
Ringt sich frisches Leben los,
Und anmuthige Gestalten
Steigen auf wo Moor und Moos.

"Dolden nicken, Rispen schwanken,
Sternlein glänzen zierlich-fein,
Ein Gespinst von grünen Ranken
Ueberzieht das Felsgestein.

"Mit dem Schroffen, mit dem Harten
Eint sich das, was zart und schön;
Dank dem Schöpfer, der zum Garten
Wandelt auch die rauhen Höhn!"

J. Trojan.

Pharmaceutical Review.

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American Pharmaceutical Association.

Aside from the President's address, which was a most exhaustive survey of the present status of pharmacy, with especial reference to its commercial condition, and the attitude which the American Pharmaceutical Association takes or ought to take toward the vital interests of the calling which it represents, much of the work of the general sessions was of a routine nature. The reports of the various officers can best be read in the printed Proceedings, the publication of which is to be accelerated this year and still more in future years. The President was especially urgent in this particular, being of the opinion that the early appearance of the Proceedings would greatly strengthen the association. The General Secretary has been allowed a liberal sum of money with which to secure the necessary assistance. However, inasmuch as the Reporter on the Progress of Pharmacy, who is, no doubt, equally pressed with work about the time of publication, has not been granted extra assistance, it will be no easy matter to edit and publish the Proceedings within the stipulated time. The suggestion has been made that a special reporter on education and legislation be appointed; and that Professor Beal, whose work of the past three years and more has fully demonstrated his ability in this direction, be requested to serve in the new capacity. The suggestion is not only an excellent one as far as it goes, but it may serve as an entering wedge in other directions as well. The writer has more than once expressed his admiration for the enormous amount of work accomplished by our Reporter on the Progress of Pharmacy and by other men doing similar work which is little appreciated. He has also, however, as often emphasized the absolute necessity of the employment of specialists in reviewing the progress made yearly in the pharmaceutical sciences.

As to the publication of the Proceedings, this can be expedited only to a limited extent by such division of labor. It seems to require at least sixty days after the manuscript is ready for the printer to publish it, even if in the hands of a large and well equipped printing establishment. It possibly makes little difference whether the members get the printed Proceedings four months or only two months after they have read the minutes as well as the addresses and papers in the various journals. To copyright the papers, etc., as was suggested, would be all right if the association is prepared to publish them within a reasonable time, e. g. in an official weekly organ as is done by the American Medical Society. If this is not done, many of the best papers will be withheld from the association entirely and published, as soon as written, in the journals. There is a way out of the dilemma, but the association evidently is not yet ready to take it.

Mention should be made of the establishment of a Maisch Memorial Prize of $50.00 to be awarded for excellence in research in pharmacognosy; also of a Hager Prize, of like amount, for work in pharmacy in a more restricted sense. The association also honored Dr. Frederick Hoffmann, since many years an active member, by electing him honorary member. Mr. Wm. Martindale of London who attended the gatherings at Chicago in 1893 was also honored in like manner. Two honorary members, Dr. Georg Dragendorff, of Germany, and Dr. J. E. de Vrij, of Holland, were removed from the roll of honorary members by death during the past year.

The Commercial Section. There was something in the air, as it were, to make the sessions of this section a success. For several years past the one session of this section was one of the routine performances that had to be gone through with. Although it was at times productive of lively scenes, it was without real life. Partly as an act of despair, partly as a good joke with which to fittingly bury this section, its members at the Minnetonka meeting elected a man as chairman who had no use whatever for the threadbare discussions of economic absurdities that had taken up so much of the valuable time of this section in previous years. With the "arch cutter" as chairman, something had to happen; everybody was expectant. There were two other reasons that favored a good attendance. The question of the revenue law in so far as it affected the pharmacist was sure to come up. Those who always had been hoping that the American Pharmaceutical Association would do something for them,

seemed to feel that now it must act or forever forfeit its hold on the retail druggist. Finally, the western druggists were going to form an association of their own which was to represent the commercial side of pharmacy, the retail drug business, and from which were to be excluded the manufacturer and the college professor.

With this trio of attractions, the room in which the first session of the section was called to order was soon filled to overflowing. Those who had been clamoring to bring together seventy-five percent of the druggists by persuasion and the remaining twenty-five percent by compulsion in order to screw up prices were told, indirectly it is true, that the discussion of such local topics by a national organization is nonsense; that God helps those who help themselves, and that those who are constantly waiting for others to "do something" for them will get left in this world.

But after all this, an editor who has failed to see the point criticizes the "ultra-scientific" professor for "sneering" at the commercial section in past years and thus giving just cause for the complaint of the "practical druggist" and his "breaking away" from the A. Ph. A. The fact is that the college professor has not "sneered," though he may have criticized, that he has attended the sessions of the commercial section better—even if from a mere sense of duty and as a matter of courtesy—than the so-called practical man attended the scientific section. At Baltimore the commercial section had the discourtesy to arrange a meeting which conflicted with the scheduled meeting of the scientific section. The "ultra-scientific professors" on the other hand had the courtesy and good common sense to adjourn in order to avoid unpleasant conflict.

The chairman of this section was praised, and rightly so, for the good work he had accomplished. Yet many of those who praised his work seemed not to realize what he really had done. He had persuaded the Secretary of State to have a volume of information collected with the assistance of numerous consular agents the world over.* He was cheered for this accomplishment more because he had succeeded in having a member of President McKinley's cabinet "do something" for the A. Ph. A., as it were, than for the thought that something of practical value might be gained by the study of the published consular reports.

The papers read by the chairman (See p. 71 of Supplement) are

* See Special Consular Reports, vol. 14: The drug trade in foreign countries.

indicative of the satisfaction which the author derives out of the commercial pursuit of his business and out of the study of past conditions as well as present of the drug trade.

But what conclusions are we to draw if the chairman of a section must read four papers in addition to his address and a government report prepared at his request, whereas all other members contribute but a dozen. Note also the just complaint of the chairman that in reply to a request sent to six hundred druggists, "mainly members of the Association," to report on the changes in methods that have occurred in the drug business in order that those in business might profit by a comparison of ideas, etc., but sixty responded. The members of this section evidently still believe in having the work done for them rather than in making an effort to do a reasonable portion of it themselves. This is not as it should be and the members of the A. Ph. A. may rest assured that the foundation of this section is a poor one as long as its members will not rouse themselves to action. The President of the association may plead for more attention to matters that make for bread and butter, other members may emphasize that "we must do something for the retail pharmacist," but all this will be of little avail as long as the pharmaceutical practitioner sits quietly with his hands in his lap waiting for others to do something for him. The present chairman has set them an example. They will honor him more by awakening to his suggestions than by overwhelming him with repeated votes of thanks.

The Scientific Section deprived of one of its three scheduled sessions, had time to dispose of but one-half of the business on hand, and even some of that could not receive satisfactory consideration and had to be laid over for a year. Another unfortunate circumstance was the referring to this section by the association of matter that properly belonged, in part to the Commercial Section, in part to the Section on Education and Legislation. Steps should be taken to avoid similar indiscriminate reference in the future.

Not only was the attendance on both sessions very good, especially if the extreme temperature that prevailed is taken into consideration, but the manner in which the members entered into the work of the session was extremely gratifying to the chairman. No queries had been sent out, there had been no "drumming up" of papers and failure had been prophesied, but the section had a larger number of papers than any other, not half of which could be read for want of

time. But what is of much greater importance, the discussion was not monopolized by two or three, but was surprisingly general. No doubt, the discussion might have been improved upon, but on the whole it served admirably the purpose for which associations exist: the bringing together of men for the exchange of ideas, for which the reading of papers is to serve principally as a basis.

In an editorial Dr. Wood* not long ago commented on the papers of the American Medical Society. He states that the vast mass of papers presented at the Denver meeting fell short of the lowest standard which he mentions, viz. the summing up of the latest knowledge acquired, in advance of the text books. According to his estimate, and it seems a fair one, most of the papers were not "good" and "unworthy of the occasion." He further claims that not one paper presented at the Denver meeting came up to his third or highest standard, that of "original experiments that are crucial tests of the validity of a claimed new principle."

Now it must be said to the credit of the American Pharmaceutical Association that the percentage of papers containing the results of original work presented before the Scientific Section was not small. Several may be said to be of far reaching importance to pharmaceutical science, even if they did not create the sensation of the questionable discovery of a possible new element. In this respect the papers presented before the section compare very favorably also with the papers read before the other sections of the association. They certainly represent more labor on the aggregate and no less brains. The craze of "doing something," which finds much more room for play in the other sections, seems to have caused the association to largely forget this fact. With all due appreciation of the various spheres of activity of the association, its scientific work, which is by no means necessarily restricted to this section, must remain the back bone of the American Pharmaceutical Association.

It may not be out of place here to call attention to an interesting coincidence. Prof. Henry Kraemer, who has been working on powdered drugs for several years, for the first time presented a complete scheme for the qualitative examination of powdered drugs. Tentative though the scheme may be, it is of no small importance as a first step in this direction. It was also at the Baltimore meeting, twenty-eight years ago, that Dr. Frederick Hoffmann read

* Am. Medico-Surg. Bull., 12, p. 591.

a paper on the application of the microscope in the study of drugs and accompanied his paper with the exhibition of permanent mounts. The subject at that time seems to have been entirely new to American pharmacists, even to such as Prof. Maisch, who later visited Dr. Hoffmann in New York in order to learn more about the subject. The incident is of interest inasmuch as the two Baltimore meetings thus mark two mile stones in the study of American pharmacognosy. In this connection mention should also be made of the fact that the section has at last discovered that there are botanists and pharmacognoists—or should we say pharmacologists?—in the association worthy of filling the position of chairman.

We cannot close these remarks on the Scientific Section without calling attention to the loss the association has suffered, and this section in particular, in the death of Professor Henry Trimble. Prof. Lloyd paid tribute to his unselfish devotion to pharmaceutical science and the section rose in honor of his memory.

Section on Education and Legislation. The most important event of the three sessions of this section was undoubtedly the reading of the chairman's address. The address contained nothing new or startling, as the speaker pointed out in his introduction, and yet we make the above statement advisedly. As secretary of this section, the chairman of the Baltimore meeting had not only revealed an interest in the subjects of legislation and education, but also an unusual capacity to handle these subjects, particularly the former. No doubt, his legal training has materially influenced his qualifications in this direction. The members of the American Pharmaceutical Association have listened with pleasure to his sober views previously presented on various occasions and have begun to consider him as a kind of authority.

We have more than once expressed our regret that his knowledge and good common sense could not be turned to greater account in the problem of a model pharmacy law with which the Association has now been grappling for several years without apparently the slightest positive result. The address, which was nothing more or less than a concise, connected statement of his views, was, therefore, very opportune. Every pharmacist should not only read it, but study and digest it so that the sound ideas expressed may become flesh and blood with him. This would materially hasten the evolution of pharmacy in the right direction.

Johann Eliza de Vrij.

The comparatively small array of veteran pharmacists of the last half of the present century is rapidly passing away into the realm of the history of pharmacy, — itself a structure vanishing in the irrestrainable metamorphosis and the altered conditions of applied knowledge and art in the traditional medical and sanitary service.

After the recent demise of Flückiger, Hager and Dragendorff in Germany, of Ferdinand von Müller in Australia and of his countryman Pieter Cornelius Plugge in Groningen, the senior of the remaining areopagus of scientists and writers originating from the ranks of pharmacy, Johann Eliza de Vrij, parted with this life at the Hague on July 31, 1898, at the advanced age of 85 years.

Like the majority of distinguished men starting from the once fertile domain of pharmacy, de Vrij entered upon the field of scientific inquiry early and had the good fortune to apply his talents at the proper time to experimental researches on the constituents of the cinchona trees, whose cultivation was an important economic and colonial problem for the Indian possessions of Holland and Great Britain about the middle of the present century. De Vrij's services were early engaged in this venture and for the rest of his life he confined his work mainly to this domain of applied science, contributing thereby to successful results and to the wellfare of his country and of mankind as well as securing for himself reward and fame.

Johann Eliza de Vrij was born January 31st, 1813, as the oldest son of an apothecary in Rotterdam. He also became a pharmacist and at the age of 19 years was obliged to conduct his father's pharmacy on account of the latter's death in 1831. Young de Vrij, like many of his contemporaries in pharmacy, devoted himself with enthusiasm to chemistry, attracted thereto by what was then the most imposing and fascinating textbook of chemistry, that of Berzelius, which had been issued in a German translation by Wöhler from 1825 to 1831, as well as by the lectures of the most eminent Dutch chemist of his time, Dr. Georg Johann Mulder, Professor of Chemistry, Pharmacy and Botany at the medico-pharmaceutical institute at Rotterdam.

In 1832 and 1833 de Vrij was engaged upon the translation of the great hand-book of analytical chemistry by Professor Heinrich Rose

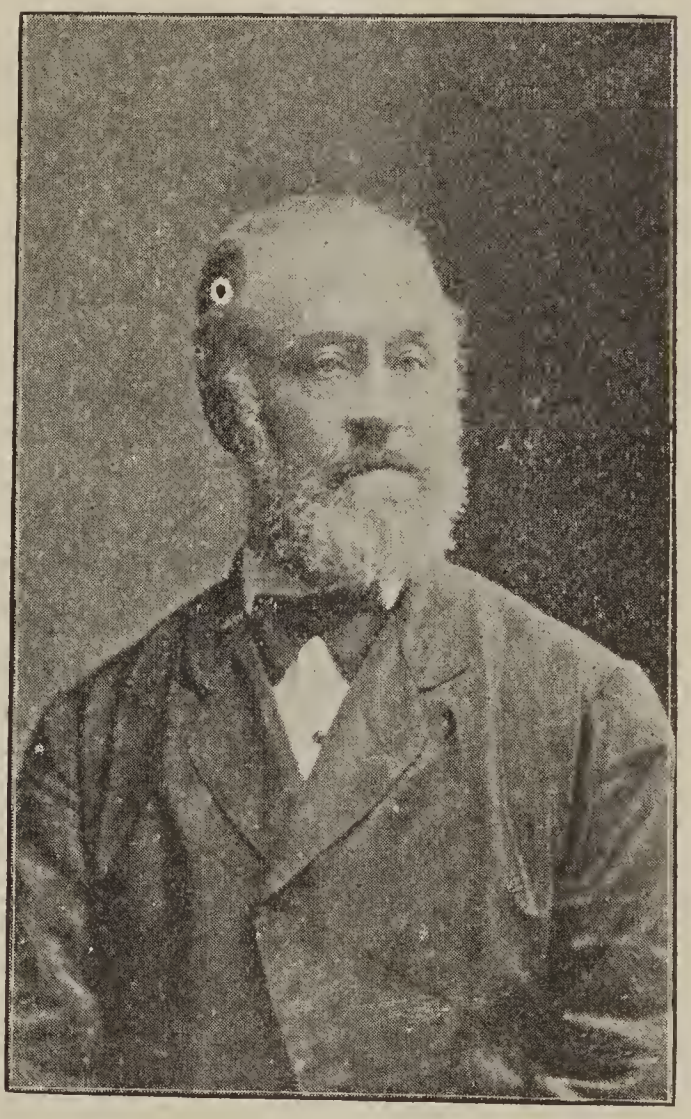
in Berlin, published in a second German edition in 1831. The successful accomplishment of this considerable enterprise brought de Vrij's name before the chemists of the time. In the secure possession of his remunerative pharmacy, and bent upon travelling, he visited in the course of the subsequent years Germany, France and England and made the acquaintance of many of the foremost scholars of the time, among them Berzelius of Sweden, Gustav Magnus, Heinrich Rose, J. B. Trommsdorff, Philip Lorenz Geiger, G. Bischoff, Justus Carl Hasskarl, Theod. Nees von Esenbeck, Kerner and others in Germany, Jos. Pelletier, Jean B. Caventou, Dumas, Pelouze, Peligot, Cahours, Bouchardat etc. of France, Faraday, Graham, Miller, Playfair, Daniel Hanbury and John Elliot Howard of England. De Vrij subsequently cultivated all these acquaintances to the best of his ability and interests.

In 1838 de Vrij obtained the degree of doctor of philosophy from the University of Leiden and was appointed Professor of Pharmacy, Pharmacology and Botany as successor to his former teacher Prof. Mulder, who had accepted a call to the University of Utrecht. De Vrij for a time retained his pharmacy under the management of a competent clerk to whom, however, he disposed of it in 1850.

About the year 1845 Dr. de Vrij entered upon a series of various investigations. Of much consequence among them were his critical researches on Mulder's theory on the formation of plant organisms by mere chemical processes without the intermediate action of bacteria, for instance in solutions of sugar of milk. De Vrij successfully contested any such conception of *generatio aequivoca*. He furthermore engaged upon extended researches on the acids formed by the action of a boiling solution of potassium chlorate upon tartaric acid, and on the action of acids upon albumen and gluten. In 1847 he succeeded in splitting hydrochlorate of urea by heating into cyanuric acid and ammonium chloride. In 1850 and 1851 he occupied much time in researches on explosive cellulose and on nitroglycerin. At the same time he studied and improved the methods for the alkaloidal estimation of opium, demonstrated the non-poisonous character of red phosphorus, and investigated in connection with a study of ethyl iodide better methods for the preparation of the halogen compounds of the alcohol radicles. In 1853 Dr. de Vrij improved the methods for determining the amount of hydrocyanic acid in cherry-laurel water, and of alkaloids by means of phospho-

molybdic acid, later on introduced into chemical analysis by Sonnenschein.

At the international exhibition at Paris in 1855 Dr. de Vrij was appointed one of the commissioners and jurors of the Netherlands for 1857, with the special instruction to obtain all possible information in regard to the cultivation of cinchona trees in the East Indian colonies. In Paris he made the acquaintance of several of the foremost quinologists, among them H. A. Weddell, August Delondre and John Elliot Howard and obtained much useful information. Henceforth he applied his principle study and work to quinological researches.



Johann Eliza de Vrij.
Born Jan. 31, 1813; died July 31, 1898.

In 1852 the Dutch government had sent the German botanist Dr. Justus Carl Hasskarl to Bolivia to obtain seeds and young plants of the best kinds of cinchona, particularly *Cinchona calisaya*, in order to transplant them to the island of Java. While Franz Wilhelm Junghuhn, another German botanist, was exploring the flora of Java, Hasskarl endeavored to cultivate the cinchonas brought from Bolivia. His success was only a partial one. Junghuhn recognized the necessity of having the additional assistance of a chemist familiar with the cinchona alkaloids in order to secure a successful result of the venture. He proposed for such a co-operator Dr. de Vrij who accepted the appointment as governmental quinologist for Java. In consequence he resigned his professorship and sailed for Java October 28th, 1857, in company with his friend W. H. de Vriese, Professor of Botany at the University of Leiden, who had been appointed in place of Dr. Hasskarl, who on account of ill health returned to Germany.

The cinchona species first introduced and cultivated in Java had

been determined and named by Howard *Cinchona Pahudiana*, in honor of Ch. Ferd. Pahud, then governor of the Dutch colonies in East India. This species, however, proved to be of inferior quality in regard to its amount of alkaloids and was promptly replaced by *Cinchona Ledgeriana*, one of the richest species of the cinchonas.

Dr. de Vrij henceforth devoted his energy and investigations to the study of the chemistry of the cinchona alkaloids and additional constituents. He accumulated a large amount of observation and experience in regard to the cultivation and the constituents of cinchonas and some other useful plants, contributing much to a better and more correct knowledge of them. With a large amount of valuable information and material for further research he returned to Europe in 1863. On his homeward trip he paid a visit to the extended British cinchona plantations on the Nilegiris hills of the Malabar coast, then under the able management of W. G. Mac Ivor at Utakamand.

Upon his return Dr. de Vrij settled in the Hague where he established a small private laboratory for his further researches and where for about 30 years he has devoted his time and energies to quinological studies. Under the title of *Kinologische Studien* he has published in various periodicals a long series of elaborate investigations of the various constituents of the cinchona barks, of their alkaloids and the methods of their separation and quantitative determination, as well as of their proper preparation and application for medicinal use. He established the so-called chromate determination of quinine and contributed much to obtaining better and cheaper methods for the separation and manufacture of the cinchona alkaloids in a purer state. In this way he has served his country well and has aided in securing a better and more yielding supply of one of the remedies most valuable to mankind.

Not only his own, but other countries, governments and national associations have conferred honors and distinction upon the Dutch scholar during his lifetime; among them the American Pharmaceutical Association, which elected Dr. de Vrij an honorary member in 1871.

Personally Dr. de Vrij was an unassuming and congenial man of a commanding stature and graceful address. In common with other delegates the writer had the pleasure of much of his company and mutually instructive exchange of views during the two pleasant

weeks spent in London on the occasion of the fifth international pharmaceutical congress in August 1881. Dr. de Vrij has ever since evinced his friendly remembrance by occasional correspondence and by the presentation of all of his publications and the repeated remittance of his photograph. The accompanying portrait is a reproduction of one of the earlier photographs presented to the writer in 1885, representing the distinguished scholar at the most productive period of his life. *Fr. Hoffmann.*

MONTHLY REVIEW.

Chemistry.

Ether, Theory and Technique of its Formation.—A year ago Prunier (Pharm. Ztg. 1897, Nos. 54 and 61) published a theory concerning the formation of ether which pays special attention to the by-products. This article has been subjected to a critique by M. Klar in the Chemische Industrie of this year. The former journal now supplies an abstract of the second article which, however, is too long to be reprinted.

[Pharm. Ztg. 43, p. 610.] *E. K.*

Derivatives of Menthol. — The series of articles published in the Proceedings of the A. Ph. A. and in the Am. Chem. Journ. by E. Kremers and associates is supplemented by a study of the molecular weights of several derivatives of menthene. Conclusive proof is brought of the dissociation of the white bismolecular nitrosochloride of menthene etc. to the monomolecular blue compound. A general discussion of these nitroso compounds, not only of menthene but also of other unsaturated hydrocarbons, the so-called terpenes etc., is found in a separate article.

[Pharm. Archives, 1, p. 102, 107 & 117.] *E. K.*

Assay of Spirit of Nitrous Ether. — Few medicinal preparations have given rise to more discussion than the one commonly known as sweet spirit of nitre. The methods of preparation as well as the tests for strength have been the subjects of research and discussion by pharmacists and chemists for many years and yet the subject cannot be regarded as concluded.

R. Fischer and J. A. Anderson have recently made a thorough study of the methods of assay. The paper cannot well be abstracted, but the conclusions arrived at may be quoted:—"Both methods, when carefully operated, give about the same results, the gasometric method being preferable on account of the easy manipulation and rapidity of the operation.

The results obtained indicate a high degree of purity of the washed ether of the pharmacopœial process. If sweet spirits of nitre is intended to be merely an alcoholic solution of ethyl nitrite, the U. S. P. process must be regarded as highly satisfactory. If, on the other hand, as is contended by some, the by-products of the old process played an important part in the remedy, the question of making a satisfactory preparation of uniform composition becomes more complicated. It might be desirable to experiment on various mixtures of ethyl nitrite and ethyl acetate, with possibly a little aldehyde, as to the therapeutic effects of such mixtures, and a spirit of nitrous ether made official corresponding to the most desirable combination. That is a question, however, which must be settled by the pharmacologist and not by the pharmaceutical chemist."

[Pharm. Archives, 1, pp. 161 and 169.] *E. K.*

Cathartic Acid in Rhubarb.—Dragendorff in 1878, Greenish in 1879 and Elborne in 1884 obtained from 2.26 p. c. to 5.25 p. c. of cathartic acid from rhubarb. The latter states that he considers the cathartic acid obtained from rhubarb to be identical with that obtained from senna. Hesse considers the cathartic principle of rhubarb to be an amorphous brown resin. But he examined only the ethereal extract. Other workers upon rhubarb do not mention cathartic acid.

Working under the directions of A. B. Stevens, several students have separated cathartic acid from rhubarb and senna, and comparing them by physiological tests, found them to be identical.

In the first method used for the separation of the acid, the drug was exhausted with water, concentrated at a low temperature, the gum precitated with 85 p. c. alcohol, the liquid concentrated and precipitated with absolute alcohol.

One sample of rhubarb was exhausted with alcohol, and the dried marc found to be decidedly active. The marc was exhausted with water and a cathartic substance separated similar in appearance and action to that obtained from senna.

[Read at the Baltimore meeting of the A. Ph. A.] *A. B. S.*

Alkaloid in Taraxacum Root.—In studying the nature of the bitter principle of dandelion root evidence of the existence of an alkaloid disclosed itself. A report of this had been made at previous meetings of the association. To make sure that the indications referred to had not been misleading from any cause and to confirm what had been stated, a large quantity of the root was collected, dried and powdered under personal supervision. This was thoroughly extracted with chloroform. The chloroformic extract was washed with water acidulated with sulphuric acid. The acidulated aqueous solution, thoroughly washed with chloroform to remove traces of wax, chlorophyll etc., was rendered alkaline with ammonia water

and shaken out with successive portions of chloroform. The chloroformic solutions were evaporated to dryness on a water bath. When dry a little ether was added and this was evaporated in order to expel the last traces of chloroform. The alkaloidal residue weighed and computed showed a yield of about 0.002 per cent.

When dissolved in dilute sulphuric acid the solution gave heavy precipitates with Mayer's solution, Wagner's reagent, gold chloride and other alkaloidal reagents. A more accurate study of the alkaloid will be made during the present year.

[Read at the Baltimore meeting of the A. Ph. A.] *L. E. Sayre.*

Certain Alkaloidal Periodides and the Volumetric Estimation of Alkaloids as Higher Periodides.—In continuation of previous work upon perhalides of organic bases,* Prescott and Gordin have now obtained the following, as compounds of quite constant composition:

Atropine hydriodide octaiodide, $C_{17}H_{23}NO_3 . HI . I_8$.
Strychnine hydriodide hexaiodide, $C_{21}H_{22}N_2O_2 . HI . I_6$.
Brucine hydriodide hexaiodide, $C_{23}H_{26}N_2O_4 . HI . I_6$.
Morphine hydriodide triiodide, $C_{17}H_{19}NO_3 . HI . I_3$.
Aconitine hydriodide hexaiodide, $C_{33}H_{45}NO_{12} . HI . I_6$.

The morphine periodide obtained constant in the given conditions is the same found by Jörgensen in 1870. The composition of the higher periodide of aconitine above written, on the alkaloid formula of Dunstan, is given provisionally. The same conditions insure the formation of the periodide of caffeine obtained by Gomberg in 1896, namely caffeine hydriodide tetraiodide.

The conditions necessary for these formations are only those of precipitation from quite dilute water solutions with a constant excess of iodine from first to last, the alkaloid being in a salt or acid solution. In such conditions these are the highest periodides that can be formed. In precipitation from water solutions with excess of the alkaloidal salt, lower periodides are formed in case of atropine, strychnine, brucine, aconitine, not in case of morphine. Some of these lower periodides the authors have analyzed and others will be examined. In character and behavior the periodides of the vegetable alkaloids agree in general with the perhalides of pyridine and its more immediate derivatives, as these have been previously studied in the same laboratory. Also the reactions of these periodides of the bases of the pyridine type are generally the same as those of caffeine pentiodide, formed when caffeine is in acidulated solution, as found by Gomberg. And these bodies are to be studied with perhalides in general, and with the question of what orders of bases are capable of forming perhalides, and the relation of these, in structure, to the double halides. The production of a periodide of brom-

* Prescott, Gomberg, Trowbridge and others, 1895–98: J. Am. Chem. Soc. 17, pp. 775, 859; 18, pp. 28, 91, 331, 347; 19, 322, 558.

triphenylmethane, about to be published by Gomberg, is of interest as an organic perhalide destitute of any element of the nitrogen family, as was also the iodonium perhalide obtained by Victor Mayer in 1894, and the sulphon periodide reported in this country by Kastle in the same year.

The higher periodides of the vegetable alkaloids, as named above, are sufficiently stable to give very constant results in analysis, both for the additive iodine and for that of the hydriodide. Obtained in crystalline forms they were found to have the same composition as the amorphous precipitates after washing and drying. In the volumetric procedure, however, washing is avoided, an aliquot portion of the filtrate being taken, in which to titrate back with the thiosulphate for the excess of iodine added. In this way is obtained a very accurate measure of the iodidine consumed in supplying the additive iodine of the periodide. The more firmly bound iodine of the alkaloidal hydriodide, not responding to reducing agents, is supplied by the iodine of the potassium iodide, that of Wagner's reagent, or iodopotassium iodide, always employed. This probable explanation of the reaction of the precipitation was verified by the authors in a quantitative investigation at some length.

The results of analysis of the periodides were found to be well sustained by constant results in volumetric estimation, the alkaloid-to-iodine factors calculated from the chemical formulae of the periodides being used in every case for the volumetric work, with agreement quite satisfactory, as presented below. The calculation for each alkaloid was made upon its chemical formula, as given in a previous paragraph:

Ratio of alkaloid to 1 of iodine.	Total iodine.		Additive iodine.		Percent sol. made.	Percent found by vol. anal.
	Calc.	Found.	Calc.	Found.		
Atropine, 0.2849	79.74	79.48 80.13 79.62	70.88	70.98 71.15	0.50 0.40 0.30	0.47 0.36 0.28
Strychnine, 0.4390	72.66	72.70 72.54	62.28	62.14 62.34	1.000 0.612	1.026 0.633
Brucine, 0.5179	69.21	69.04 79.04	59.32	59.19 59.37	1.000 0.5	0.999 0.497
Morphine, 0.74916	64.03	63.80 63.54	48.02	48.29 48.44	0.518 0.259 0.100	0.525 0.257 0.105
Aconitine,	57.85	55.93	49.58	49.03		

In the case of atropine the authors obtained two mercuric iodides, respectively $C_{17}H_{23}NO_3HI.HgI_2$, and $(C_{17}H_{23}NO_3HI)_2HgI_2$. They can be pre-

pared by treating the periodide with metallic mercury and in other ways described.

In the volumetric estimations, the iodine solution is made of decinormal strength, with sufficient potassium iodide, and a corresponding strength of solution of sodium thiosulphate is used. To a known volume, constituting an excess of the iodine solution, a measured quantity of an aqueous salt solution of the alkaloid is added gradually, the mixture is shaken until the liquid becomes clear, when an aliquot part of all is filtered off and the excess of iodine determined by titrating with thiosulphate to an end reaction with starch.

The authors have elaborated a volumetric method of opium assay, upon the following plan: The opium alkaloids are set free by action of ammonia with certain solvents applied to the powdered opium. The free narcotine, paraverine, codeine and thebaine are then removed by percolation with benzene (benzol), after which the morphine is wholly taken out by percolation either with amyl alcohol or with acetone. Both these solvents have been used. The percolation is effected well by admixture of dry common salt with the opium powder. The solvent is evaporated from the percolate of morphine and the residue taken up with lime water, whereby the alkaloid is purified from color and other extraneous matters. The filtered lime solution is acidulated and the morphine in it estimated directly as periodide. One gramme of opium is quite sufficient, and two or more final titrations can be obtained from this quantity.

In the results of opium assay by this method, repeated operations give figures agreeing quite closely with each other. So far as compared with the pharmacopœial assay, the results do not give lower percentages, but in some cases give higher percentages.

Other drug assay methods, with volumetric estimation of the alkaloid as periodide, are in progress of investigation.

So much of this article as relates to atropine was published in substance in J. Am. Chem. Soc. for May, 1898, and the portion relating to opium assay was published in Phar. Archives for June 1898.

[Read at the Baltimore meeting of the A. Ph. A.] *A. B. P.*

The Volumetric Estimation of Cinchona Alkaloids.—From a comparison of the various methods for the estimation of alkaloids in cinchona bark Ekroos concludes that here, too, preference is to be given to the method of Keller. He, like others, also finds that when ammonia is used this is partially taken up by the ether, contaminates the alkaloidal residue and thus causes a plus error. Ekroos proposes to substitute sodium hydroxid, asserting that this is entirely satisfactory. The following determinations are given to show the accuracy of the method.

12 gm. of finely powdered red cinchona bark were macerated with 120 gm. ether and 10 cc. of 10 p. c. caustic soda solution for six hours, the mixture being at intervals shaken vigorously, and then 10 cc. of water added. 100 gm. of the ethereal solution, representing 10 gm. of bark, were weighed into a separator and shaken with 30 cc. of $\frac{1}{10}$ normal sulphuric acid, this drawn off and the ether extracted with three portions, 20 cc. each, of water. The united extracts were then titrated with $\frac{1}{10}$ normal alkali, a freshly prepared alcoholic haematoxylin solution being used as indicator. 14 cc. $\frac{1}{10}$ normal alkali were required to neutralize the excess of acid, 16 cc. $\frac{1}{10}$ normal sulphuric acid therefore had combined with the alkaloid indicating on calculation, 4.86 per cent. In a second experiment 12 gm. of drug were macerated with 90 gm. ether, 30 gm. chloroform and 10 cc. soda solution for 8 hours, the assay being then finished exactly as the first one. The result indicated 4.80 per cent alkaloid. Further experiments demonstrated that maceration for 3 hours was amply sufficient. The alkaloidal titration requiring some skill to ensure sharp results some suggestions are offered by the writer. When volumetric sulphuric acid is used it is desirable to destroy the fluorescence by the addition of a little sodium chloride; use of hydrochloric acid avoids this fluorescence. The indicator is best freshly prepared for each titration by dissolving a minute crystal in a little alcohol and water. But little of the indicator must be used to obtain sharp color-changes. When standardizing the volumetric solutions the same indicator must be employed.

The method was found equally satisfactory with fluid and solid extracts of cinchona.

[Pharm. Ztg. 43, p. 573; from Arch. d. Pharm. 5, 236, p. 328.] *W. A. P*

Distribution of Manganese.—P. Pichard finds that the presence of manganese is almost universal in the ash of organized matter, whether of animal or of vegetable origin. The seeds of phanerogams and the tissues of rapidly growing cryptogams are specially rich in this metal. It is also found in various marine animals, such as molluscs and crustacea, in the bones, eggs, flesh, and hair of vertebrates, also in cow and horse dung. The accumulation of the metal in the seeds and actively vital parts of plants, as well as its occurrence in the two last-named manures, is confirmatory of the theory lately advanced as to its vital importance in the vegetable and animal economy.

[Pharm. Journ. 61, p. 217; from C. r. 126, p. 1882.] *E. K.*

Acids of Geranium Oil.—Flatau and Labbé contradict the statement of Messrs. Schimmel, that the chief acid constituents of Indian geranium oil are equal parts of acetic and caproic acids. They find that the chief ester is a compound of geraniol with an isomer of myristic acid, from which the acid differs only in having a lower melting point, 28°.2 C., instead of 53°.8 C.

The analytical numbers obtained from silver, barium, and calcium salts are all in accordance with the formula $C_{14}H_{28}O_2$. Besides this, acetic acid and traces of valerianic acid were isolated. Bourbon geranium oil did not give this new body, but about one per cent. of another acid having the formula $C_{10}H_{18}O_2$, half of which exists in the free state, and the rest as a geranyl ester. [Pharm. Journ. 61, p. 217; from C. r. 126, p. 1876.] *E. K.*

Determination of the Ash of Fats.—Dr. A. Delecoenillerie suggests the following simple plan for burning off fats, previous to incineration, in the analytical determination of the ash. The weighed quantity of the sample is melted in the platinum dish, and then a small ash free filter paper folded in four is stood in the melted fat and lighted; this then serves as a wick, and the fat is quickly and completely burnt off.

[Pharm. Journ. 61, p. 217; from Rev. Pharm. de Flandres, 5, p. 65.] *E. K.*

Compound Carbonic Esters.—P. Cazeneuve and A. Moul have succeeded in producing many hitherto unobtained double carbonic esters of the aromatic and fatty series by heating certain neutral phenolic carbonates in various alcoholic media, with certain organic bases. Thus, when phenyl carbonate is treated with urea in the various alcohols of the fatty series, a double carbonic ester of the phenol and the respective alcoholic radicles has been obtained. In this manner phenyl-methyl and phenyl-ethyl carbonates, and those of the higher members of the fatty series, have been isolated; by substituting other phenolic carbonates, such as those of guaiacol, thymol, and cresol, corresponding double carbonates resulted. Many of these bodies have not previously been isolated. The presence of the base is necessary for the reaction; probably this first combines with the alcohol radicle to form an alcoholate, which is subsequently decomposed; thus acting in the same way as sodium ethylate, which, when brought into a cooled alcohol-ether solution of phenyl carbonate gives double ethyl-phenyl carbonate.

[Pharm. Journ. 61, p. 217; from C. r. 126, p. 1871, and 127, p. 111.] *E. K.*

Oil of Eucalyptus.—Whilst in Western Australia last year, E. J. Parry visited most of the eucalyptus districts, and was able to secure a supply of oil distilled from the leaves of *Eucalyptus toxophleba*, the York gum. The oil is described as having a most obnoxious and irritating odor, its specific gravity is 0.8828, and it is faintly dextro-rotatory. It contains about 15 to 20 per cent. of cineol, together with phellandrene, aldehydes, and ketones. [Pharm. Journ. 61, p. 186.] *E. K.*

A New Constituent of Oil of Lemon.—In examining lemon oil, J. C. Umney and R. S. Swinton have separated an ester of geraniol, and they consider that the presence of this compound has an important bearing upon

the odor and taste of lemon oil, and that a concentrated lemon oil must contain the ester in normal proportions, in addition to citral and citronellal, before it can be said to represent in a concentrated form the true odor and taste of the natural oil. [Pharm. Journ. 61, p. 185.] *E. K.*

Note on the Mydriatic Alkaloids. — The descriptions and tests of mydriatic alkaloids given in the new Pharmacopœia are considered by H. A. D. Jowett to be generally unsatisfactory, and in some cases misleading and inaccurate. In the case of atropine and its salts he thinks the insertion of the color test with fuming nitric acid and potash is quite unnecessary, and he suggests that to ensure pure products, such as might reasonably be expected from manufacturers, reference should be made to the melting point, formation and melting point of the aurichloride, optical inactivity, and freedom from ash on ignition. It is suggested that the melting point of hyoscyamine should not be lower than 200°, that scopolamine or hyoscine hydrobromide should have its solubility given as 1 in 4 rather than 1 in 1, and that the melting point given for the dehydrated salt should also be modified. [Pharm. Journ. 61, p. 185.] *E. K.*

The Characters and Methods of Assay of the Official Hypophosphites. — An investigation of hypophosphites by H. A. D. Jowett has had for its object the discovery of an accurate method for determining the amount of hypophosphite contained in commercial salts. In the method suggested, the impurities are first removed by the addition of lead acetate, the excess of lead is then removed by hydrogen sulphide, and the hypophosphite contained in the filtrate completely oxidised to phosphate, which is then determined either gravimetrically or volumetrically. The author suggests a thorough revision of official tests for hypophosphites and the need of fixing standards of purity for the same—for the calcium and barium salts, 98 per cent.; for the sodium and potassium salts, 96 per cent.; for the ferric salt, 95 per cent. [Pharm. Journ. 61, p. 185.] *E. K.*

Notes on Concentrated Oil of Lemon. — Concentrated oil of lemon is a misnomer, according to T. H. W. Idris, as the terpene of the ordinary oil has a flavour and pungency which are peculiar to itself. Some "concentrated soluble essence of lemon" has been found to consist simply of oil of lemon to which alcohol has been added. Other samples contain added lemon-grass oil or citral, or an admixture of ethers with the oils of lime and orange. Such mixtures are of but little value to mineral water manufacturers, but "terpeneless" oils are of decided utility. Those oils differ considerably, however, and the author of this paper shows how the aldehydes in oil of lemon can be separated without much change and in a state of comparative purity by fractional distillation under reduced pressure. After distilling off about 90 per cent. below 100° C., an oily liquid is left, which

deposits a white sediment on cooling. By passing steam through this residue, a pale yellow oil is carried over, which possesses to a very marked degree the pure lemon aroma and is very different from citral.

[Pharm. Journ. 61, p. 185.] *E. K.*

The Action of Solutions on the Sense of Taste.—A report on this subject was presented by Kahlenberg to the Dec. meeting of the Wisc. Ac. of Sc. Arts & Letters in 1897. The relation of the taste of acids to their degree of dissociation, is the title of a paper by T. W. Richards in the Febr. number of the Am. Chem. Journ. Kahlenberg has recently published his results which he summarizes as follows:—

1. In order that a substance may affect the sense of taste, it must be soluble in water; it must be readily diffusible; and it must be capable of reacting chemically with the protoplasm of the terminals of the nerves of taste.

2. The modern theories of solutions lead to the conclusion that the taste of a solution that conducts electricity ought in general to be that of the ions and the undissociated molecules that the solution contains; furthermore, the taste of a solution in which ionization is practically complete should be simply that of the ions. This is supported by the results of the investigation of the taste of solutions of electrolytes above given.

3. Sour taste is caused by hydrogen ions.. The sense of taste is able to detect hydrogen ions even in N/800 solutions. In more dilute solutions than N/200, hydrogen ions may cause simply an astringent sensation. The sour taste of acetic acid solutions has been found to be more intense than it ought to be according to the degree of dissociation of the substance. No explanation of this phenomenon has thus far been attempted.

4. Hydroxyl ions produce an alkaline taste, which can be perceived even in N/400 solutions. In strong solutions their taste is exceedingly disagreeable. Pure water, being very slightly dissociated, is tasteless probably because its undissociated molecules do not act on the protoplasm of the nerve.

5. Chlorine ions have a salty taste. The taste of common salt solutions is mainly that of chlorine ions. Chlorine ions can still be faintly tasted in N/50 solutions. Bromine ions also have a salty taste, which, however, is slightly different in quality from that of chlorine ions. The sense of taste appears to be able to detect chlorine ions at a slightly greater dilution than bromine ions. The ions ClO_3 and BrO_3 have a somewhat similar taste, which, however, is not sharp and salty like that of chlorine and bromine ions. Iodine ions have a salty taste, but it is different in quality and less intense than that of either chlorine or bromine ions. It takes about a N/6 solution of iodine ions to produce a distinctly salty taste.

6. The taste of NO_3 ions is slight, probably a trifle salty; only in strong solutions do they produce a sharp burning sensation on the tip and edges

of the tongue. The ions SO_4 and CH_3 COO have but very little taste; the effect of the latter seems to be a trifle sweet.

7. The taste of sodium ions is slight. It is difficult to describe, being a smooth effect on the tongue somewhat similar perhaps to that produced by a very dilute solution of hydroxyl ions. Potassium ions have a more pronounced taste than sodium ions. It is a peculiar, bitter, rather disagreeable taste that can be much more readily detected than can that of sodium ions. Lithium ions have no pronounced taste, their effect is somewhat like that of sodium ions, though less in degree. Magnesium ions are bitter. It takes about a N/6 solution to cause a distinctly bitter taste. Calcium ions are bitter, but the taste is different in quality from that of magnesiums ions. Ammonium ions also have a bitter taste. The taste of silver ions is "metallic"; they cause a peculiar puckering sensation on the membranes of the mouth cavity. Even a N/5000 solution of silver ions can still be tasted. Mercury ions can be faintly detected by the sense of taste in N/2000 solution. Their taste is "metallic" and their effect on the membranes of the mouth cavity reminds one of that of silver ions.

8. The intensity of the salty taste of the halogen ions decreases as the atomic weight increases. The investigation of the cathions also indicates that a relation exists between their taste and their atomic weights in the sense of the periodic law. When the taste of the ions is compared with their mobility as expressed by their speed of migration under the influence of the electric current, a number of instances are found that would point to the conclusion that the greater the mobility the more intense is the taste; but there are many exceptions that show that the intensity of the taste produced by the ions is not simply determined by the readiness with which they can get at the nerve endings, but also by the reactions they undergo with the protoplasm, which of course are determined by the chemical character of the ion.

9. The intensity of the taste of solutions of substances containing amido-acid, acid-amido, alcoholic hydroxyl, and aldehyde groups was investigated, and it was found that the results obtained are in general such as one would expect viewing the matter simply in the light of Overton's determinations of the relative readiness with which these substances permeate plant and animal membranes.

10. It was pointed out that in general the alkaloids have a pronounced bitter taste, that according to Overton nearly all permeate protoplasm readily and that furthermore, they are known to exert a strong physiological action on the nerves.

11. Colloidal solutions are tasteless because the substances they contain diffuse very slowly and are chemically very inert.

[Bull. of the Univ. of Wis. No. 25.] *E. K.*

Botany and Pharmacognosy.

Pectin in Gentian.—Bourquelot and Herissey find that the pectin of gentian root, similar to that of beet root examined by Wohl and Nissen, when treated with warm nitric acid, gives crystals of mucic acid. When hydrolized with sulphuric acid it gives arabinose.

[Pharm. Journ. 61, p. 217; from Journ. de Pharm. [6], 9, p. 49.] *E. K.*

False Calabar Beans. — O. A. Farwell reports the adulteration of Calabar beans with the seeds of some species of *Mucuna,* a leguminous genus of climbing herbs and shrubs of tropical regions. The seeds of several species are picked up along the coast of Florida and the West Indian islands and are known as Florida sea-beans. These seeds were offered by South American dealers to American firms.

[Bull. of Pharm. 12, p. 269.] *R. H. T.*

Saltpeter-crystals in Extractum Cardui Benedicti.—Fine almost colorless perfect crystals of potassium nitrate were found in Extractum Cardui benedicti, the solid extract of *Cnicus benedictus*, Gaertner. The size of the largest crystals is 10 by 3 millimeters and all represent the forms $\infty P . \infty \breve{P}\infty . 2 \breve{P}\infty . \breve{P}\infty$, while several also show planes of P.

[From a written communication.] *E. Claassen.*

Dioscorine.—Plugge and Schütte have lately investigated the crystalline alkaloid first isolated by Boorsma from *Dioscorea hirsuta*, one of the most poisonous of the Yam tribe, growing in Java. The pure alkaloid melts at 43°.5, and is monobasic. The formula attributed to it is $C_{13}H_{19}NO_2$. Pharmacologically it belongs to the picrotoxin group of poisons.

[Pharm. Journ. 61, p. 217; from Arch. Intern. de Pharmacodyn.] *E. K.*

Anemonin in Anemone Pulsatilla.—Noel and Lambert conclude that anemonin is not the sole active principle of *Anemone pulsatilla*, and that it does not pre-exist in the plant; by distillation, an acrid oil, anemonol, comes over, which probably by subsequent oxidation produces anemonin. The observed pharmacological results obtained with anemonin and with the tincture of the plant are quite different. It is concluded that anemonin does not represent the whole therapeutic value of the plant.

[Pharm. Journ. 61, p. 217; from Arch. Intern. de Pharmacodyn.] *E. K.*

Commercial Varieties of Dill and their Essential Oils. — The dill fruits obtained from different countries by J. C. Umney do not show such marked difference in appearance as the fennel fruits from different parts of the world, but the differences are probably of greater medicinal importance. English, Indian, German, and Japanese dill fruits are described, and analytical data

given concerning their oils. The use of English or German fruits is recommended for the preparation of dill water, and preference for pharmaceutical purposes is given to the oils of the same varieties.

[Pharm. Journ., 61, p. 184.] *E. K.*

Popular Names of Brazilian Drugs. — In a series of papers Theodor Peckolt, the wellknown author of numerous contributions on the medicinal plants of Brazil, has begun the publication of an alphabetical list of popular names of Brazilian plants and their products, not only in the Portugese (Brazilian) language but also the names adopted by the Tupi language. The list is a very valuable contribution to pharmacognosy. Three contributions have appeared thus far beginning with Abacate and ending with Araticum pitaya. An abstract is impossible, but the following may serve as an illustration:

"Abacateiro. Abacate tree. *Persea gratissima* Gaertn., *Lauraceae.* The fruit is edible and nutritous. The berry, flowers and bark are used medicinally. Contains perseite."

[Pharm. Archives, 1, pp. 14, 97 & 144.] *E. K.*

Clove tree. — This tree, *Dicypellium caryophyllatum* Nees, which according to Peckoldt occurs in the northern states, especially in Maranhao, Pará and Amazonas, is called by the Indians *Imyra, Imyra-quizuba, Ymira-ataia. Ibira-quiyuha, Ingra-quiyuha, Licari, Kanali-cuchery* and *Espingo;* the Brazilians call it *Paó pimenta*—pepperwood, *Paó cravo*—clove wood, *Craveira da terra*—native clove tree, and *Craveiro de Maranhao.*

The tree reaches a height of from 10 to 15 meters. The bark is reddish brown. All parts of the tree are aromatic, especially, however, the bark and the root. Trommsdorff found as much as 4 p. c. of volatile oil in the bark.

The bark is collected immediately after the close of the rainy season. As a rule, the exterminating method so customary here is followed: the tree is felled, and the bark from the trunk and thicker branches peeled off in strips from 40 to 55 ccm. wide. The bark is laid on Taquara cane and dried over a gentle fire. It rolls up into the form of quills during this process. It is then tied up with lianas into bundles of 1 to 2 arrobas weight (15 to 30 kilos), enveloped in palm leaves and sent to the harbor as *Cravo grosso.* The thin bark from the branches as well as the smaller pieces of the stem bark which are freed from the cork before drying, are in a like manner tied up into smaller bundles, ⅛ to ⅜ arrobas in weight, and sent as *Cravo fino* to the seaboard town Pará for exportation. Exportation takes place almost exclusively to England and the United States of North America: it is seldom sent to Rio de Janeiro. Here it is more readily obtainable from England than from Pará.

[Pharm. Archives, 1, p. 88.] *E. K.*

Medicinal Plants of Brazil. — The contributions under this title formerly contributed by Theodor Peckolt to this journal, have been published in the Pharm. Archives since the beginning of this year. The family of the *Lauraceae* with its numerous representatives is concluded with the description of the following species:

Nectandra angustifolia var. falcifolia Nees., p. 72.
Nectandra myriantha Meissn., p. 72.
Nectandra squarrosa Nees., p. 86.
Nectandra puchury minor Nees., p. 87.
Dicypellium caryophyllatum Nees., p. 88.
Goeppertia hirsuta Nees., var. *Cantagallana* Meissn., p. 92.
Goeppertia sericeae Nees. var. *bracteolata* Meissn., p. 92.
Linharea tinctoria Arruda, p. 92.

The only representative of the *Tropaeolaceae* is *Chymocarpus pentaphyllus* Don., p. 127.

The *Alismaceae* are represented by two plants, viz.: *Acanthonychia ramosissima* var. *rosetta* Rohrl., p. 127, and *Drymaria cordata* Willd., p. 128.

Although the *Ranunculaceae*, so rich in remedial species, is represented in Brazil by eleven species, but one is used as a popular remedy, viz.:
Clematis dioica L. var. *brasiliana* Eichl., p. 129.
Of the *Menispermaceae* the following species have been described so far:
Chondodendron tomentosum Ruiz. Par., p. 129.
Abuta rufescens Anbl., p. 133.
Abuta ? caudicans Rich., p. 135.
Abuta Imene, Eichl., p. 135.
Abuta Selloana Eichl., p. 135.
Cocculus filipendula Mart., p. 136.

[Pharm. Archives, 1, pp. 71, 85, 127 & 167.] *E. K.*

Pareira Brava. — *Chondodendron tomentosum* occurs in all tropical states as far as the equator and is rather common in the state Rio de Janeiro. It is known here as *Butua*, *Abutua* and *Pareira brava* — wild vine; in the northern states *Uva da serra*, *Uva sylvestre* — mountain- and forest grape; also *Jaboticapa cipi*, *J. liane*.

The following paragraph of historic interest may be quoted. "In 1668 it was brought by the Portugese to Lisbon. From here, the French envoy, Amelot, Marquis de Gourney, introduced it into France as an universal remedy. It was brought from here to England in 1715 by Sir Sloane at a time when in Paris it commanded a price of 40 livres per pound. For a number of years, large quantities have been exported to England, France and Germany. In most apothecaries this root is an obsolete drug and is not kept in stock. For what purpose, however, are these large quantities

used? In spite of many inquiries I have been unable to obtain an explanation." [Pharm. Archives, 1, p. 129.] *E. K.*

Gogo, a Philippine Island Drug.—This drug, which is known in commerce as "gogo root," is a native of the Philippine Islands and comes into the market in long, flattened strips, three to four feet long and two to four inches wide. It is of a very fibrous nature, interspersed with long tough woody strings, which latter are the wood vessels of the plant, some of them being of enormous size and length and plainly visible to the naked eye.

The drug, which is not a root, but of stem origin, consists of the fibrous portion of the stem of *Entauda Scandens* of the order *Leguminosae*. The plant is a gigantic forest climber bearing enormous legumes, often several feet long. The seeds have been found admixed with calabar beans, to which they bear a slight resemblance. They possess emetic properties, and contain 7 per cent. of a fixed oil. In the East Indies they are roasted and eaten as food.

Professor D. C. Worcester, of the University of Michigan, states that the drug is obtained by scraping the bark from the stem of the plant, and pounding what remains. An infusion of the fibrous portion is used for various skin affections in the Philippines.

The drug possesses an acrid taste and causes nausea if taken in quantity.

Detailed examination by E. H. Gane showed it to contain little extractive matter, and no alkaloid or glucoside. The active ingredient is saponin, which is present to the extent of about one half of one per cent, and which is doubtless responsible for the emetic and other properties claimed for the plant. The curative powers in diseases of the skin are probably equal to those of soap and water, the lack of which is frequently responsible for these affections in the East.

[Read at Balt. meeting of A. Ph. A.] *E. H. Gane.*

A Comparison of the English and German Works on the Genera of Plants, with Special Reference to the United States Pharmacopœia.—The importance of system and consistency in such works as the Pharmacopœia has always received recognition through the selection by their compilers of authorities or codes, by reference to which doubtful or disputed questions are decided. In no department, in the opinion of H. H. Rusby, is there a more extensive demand for such formal treatment than in regard to the 200 or more species of plants which enter into our official work. These were consistently treated by the last Committee of Revision. The Rochester Code of Rules for Nomenclature, the fruit of a decade of study and discussion, was adopted, thus bringing the Pharmacopœia into harmony with the National Departments of Agriculture and Forestry and with the American Association for the Advancement of Science and the Botanical Society

of North America. In classification, the English authority, the Genera Plantarum of Bentham and Hooker, was adopted, except as to cases of plain error. It was recognized that this work was seriously faulty in some ways, and that some of the changes necessary in following it were in themselves undesirable. Still, it appeared at the time to furnish the only complete work of the kind available. Since then the great German work, the Pflanzenfamilien of Engler and Prantl, has been practically completed, and it becomes a matter of necessity for the next Committee of Revision to consider the comparative merits of the two works as authorities.

It is well to anticipate objections to changes in the Pharmacopœia by pointing out that any thus involved will not affect in any way the titles, working formulæ or processes, or anything else which touches medical or pharmaceutical practice, and cannot possibly disturb the convenience or safety of any one. They pertain to formulæ which concern only the accurate definitions of the titles, and, like the chemical formulæ, should always be kept as close as possible to absolute scientific accuracy. It would seem as though no reasonable objections could be filed against corrections of this character, although this has, hastily and thoughtlessly as it seems to me, been done, notably in the last edition of the U. S. Dispensatory.

While upon the subject, the exact number and nature of the changes which would be involved in adopting the German authority may be indicated. We note first that the species names are not affected, as neither of these works treats the species, except incidentally, and then only in rare instances. The changes will extend only to family and genus names, the latter alone being of importance. Of generic changes there would be but eight at the most, and one of these the author regards as an error, and thinks should not be adopted. This is the merging of the genus *Cimicifuga* into *Actæa*, by Dr. Prantl. It would appear to be a long step backward in classification to unite a genus producing dehiscent capsules with one yielding berries; and this, moreover, in the absence of any intermediate or connecting forms. The seven necessary changes thus left are as follows:

1. The genus *Cydonia* is maintained for the Quince.
2. The genus *Dichopsis*, yielding Gutta Percha, is referred to *Palaquium*.
3. The name *Uragoga* is restored to the genus yielding Ipecac.
4. The genus *Exogonium*, yielding Jalap, is restored.
5. *Picræna*, yielding Quassia, is referred to *Picrasma*.

6 and 7. The genus *Sinapis* is maintained as distinct from *Brassica*.

Three other generic changes are required, not on this account, but merely to correct errors in nomenclature. The name *Leontice* should have replaced that of *Caulophyllum* in the present edition of the United States Pharmacopœia, but for a slip by which the synonym was printed with authority, and the name was reduced. For *Andira* there is an older name, *Vouacapoua*, of Aublet. *Chondodendron* should be spelled *Chondrodendron*.

One other similar change proposed by Dr. Engler is based upon error, and cannot be adopted. He would substitute *Schoenocaulon* for *Asagroea* on the basis of the date which has been published for Bentham's Plantæ Hartwegianæ. In a former communication to this Association I pointed out that this date was erroneous, and that *Asagroea* was the older name.

Turning next to the less important changes in family names, we find eleven of them, as follows: The *Moraceæ* are separated from the *Urticaceæ*, and include *Cannabis* and *Ficus;* the *Ulmaceæ* also are accorded family rank, and include *Ulmus; Thea* is referred to *Theaceæ*, *Elettaria* and *Zingiber* to *Zingiberaceæ*, *Castanea* to *Fagaceæ*, *Chimaphila* to *Pirolaceæ*, *Erythroxylon* to *Erythroxilaceæ*, *Punica* to *Punicaceæ*, and *Krameria* to *Leguminosæ*.

The total number of changes involved is thus seen to be eighteen.

The author then discusses the importance and value of the two works referred to above and provides an elaborate table in which the composition and arrangement of the two systems are compared.

[Read at the Balt. meeting of the A. Ph. A.] *R. H. T.*

The Comparative Structure of the Barks of Certain American Viburnums. In an article under the above title R. H. Denniston describes the structure in detail of the barks of the following viburnum species; *V. prunifolium* L., *V. opulus* L., *V. lentago* L., *V. dentatum* L., *V. nudum* L., *V. cassinoides* L., and *V. lantanoides* Michx. Of these the first two are official and the others are sometimes substituted for them.

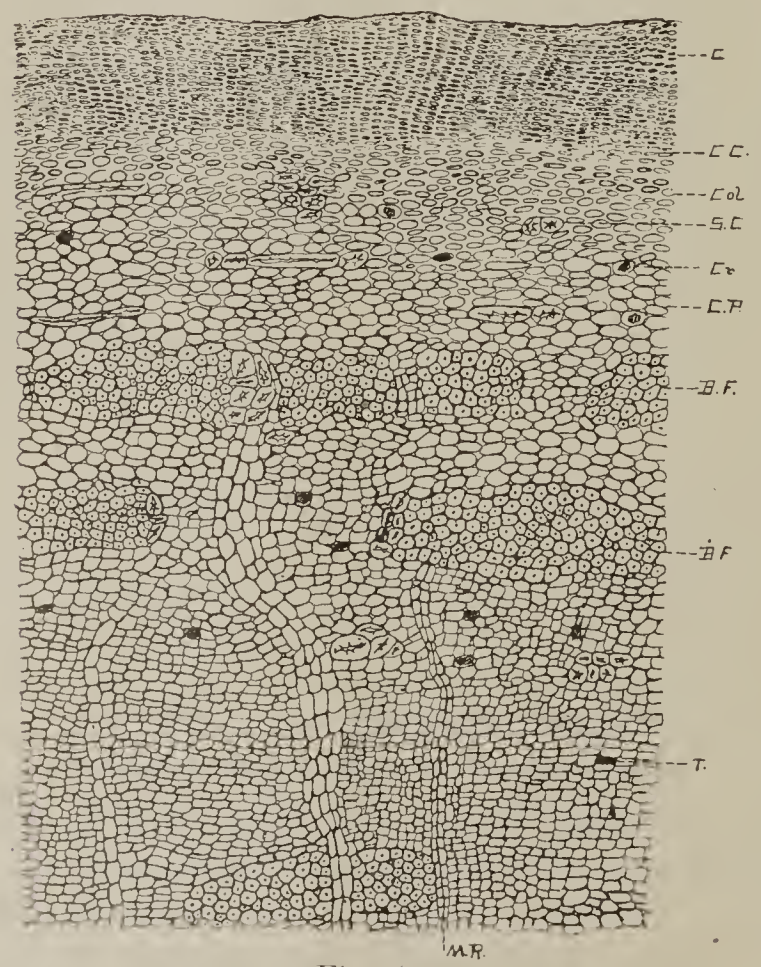


Fig. 1.

Seven plates illustrate the article, one being devoted to each species, showing the bark in cross and longitudinal section, a tangential view of a medullary ray and isolated stone cells and bast fibres.

The old bark of *V. opulus* is usually about 1 mm. in thickness. In cross section (see Fig. 1) numerous rows of small cork cells appear at the outside, followed by several rows of tangentially elongated collenchyma cells.

This bark is characterized by several bands of bast fibre groups, the number of such bands varying with the age of the bark. The groups are not in contact but are separated by parenchyma and stone cells.

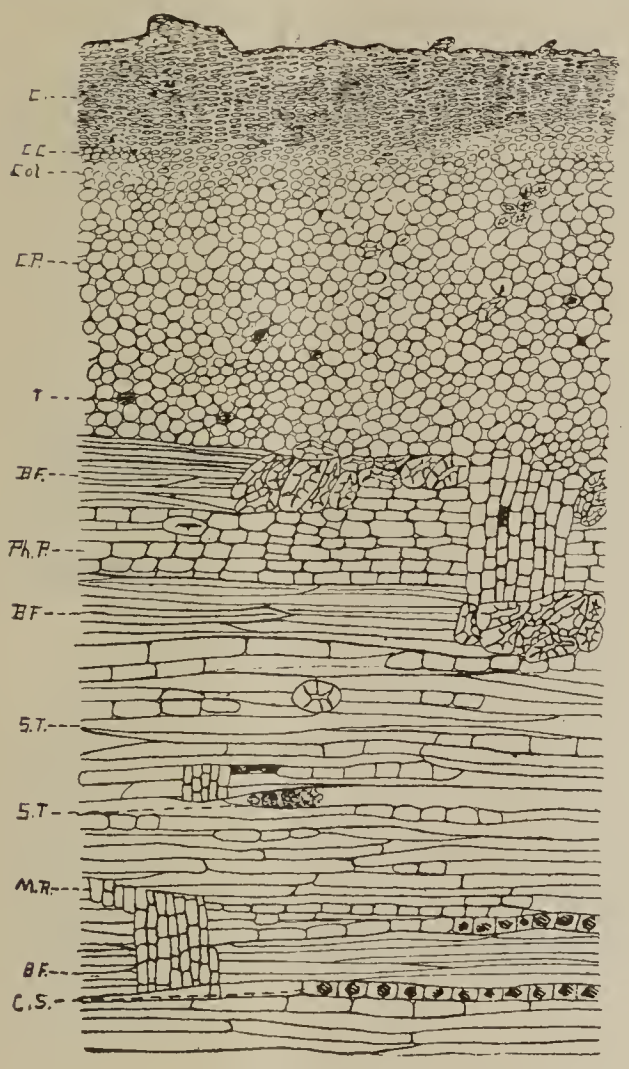


Fig. 2.

The medullary rays do not pursue an exactly straight course through the bark, but are apparently deflected to pass between fibre groups. They are often three cells in width at the outside, but toward the wood the width and number of cells become smaller. Tannin and single crystals of calcium oxalate are present in the cortical parenchyma.

In longitudinal radial view (see Fig. 2) the cork and cortical parenchyma have much the same appearance as in cross section. The fibre groups in this view appear to be bounded by a sheath of crystal cells, each containing a simple crystal. The small central lumen of the fibres is scarcely visible. Many sieve tubes can be distinguished by the series of sieve areas which appear in the lateral walls of many of the cells.

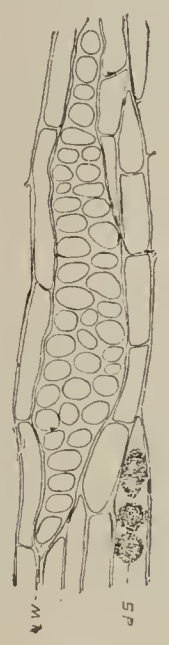


Fig. 3.

The tangential longitudinal view of a medullary ray (see Fig. 3) shows a group of cells three to four cells broad at the middle, tapering rapidly to but one cell in width at the ends. *R. H. Denniston.*

New Remedies.

Guaiacyl is according to André the calcium salt of guaiacyl sulphuric acid prepared analogously to phenylsulphuric acid. It is to take the place of guaiacol as anaesthetic in dentistry and smaller surgery. It is a greyish-yellow powder readily soluble in water and alcohol, but insoluble in fatty oils. [Schw. Wochschr. f. Chem. u. Pharm., 36, p. 260.] *E. K.*

Phosphot.—This compound, so-called by Brisonet, is similar to phosphatol and is obtained if to a solution of 12 p. caustic soda and 37 p. creosote in 135 p. water 153 p. of phosphorus oxychloride are gradually

added at a low temperature. Three "molecules" of creosote are said to react with one molecule of the oxychloride. The product is washed with water and dilute sodium carbonate solution and dried.

[Pharm. Centrh. 39, p. 415.] *E. K.*

Cearin is an ointment base prepared by Issleib which consists of 1 p. of carnauba wax and 4 p. liquid paraffin. It is a snow-white, rather soft ointment, which is said so have the advantage over paraffin ointment in being miscible with 15 to 18 p. of water.

[Schw. Wochenschr. f. Chem. u. Pharm., 36, p. 260.] *E. K.*

Amarol.—This is a new name for Ingestol, a mixture recommended by Zimmermann against diseases of the stomach and intestines. According to Mindes (see p. 190) the mixture consists of 2.5 p. magnesium sulphate; 1.5 p. sodium sulphate; 1.0 p. potassium sulphate; 0.5 p. magnesium chloride; 0.7 p. sodium chloride; 0.01 p. effervescent citrate of iron; 0.1 *Spiritus aethereus;* 1.5 p. glycerin; and 100 p. aromatic water.

[Schw. Wochsch. f. Chem. u. Pharm., 36, p. 259.] *E. K.*

Anesol.—A 1 p. c. aqueous solution of tertiary trichlor butyl alcohol (acetone chloroform, $(CH_3)2COH.CCl_3$) was first introduced under the name of anesin by Vámossy. Aneson (according to Mindes, p. 37) is a synonym employed by Hoffmann La-Roche. The same firm now employs the name anesol for the absolutely pure alcohol. The solution is recommended as a local anaesthetic.

[Schw. Wochsch. f. Chem. & Pharm.. 36, p. 260.] *E. K.*

Guaiacolsulfonic Acids.—Basell calls attention to the fact that more than a year ago he studied the salts of two isomeric guaiacolsulphonic acids and that recently he has also succeeded in isolating the free acids. The potassium salt of the ortho acid, $C_6H_3.O.CH_3\begin{cases}OH & (1)\\SO_3K & (2)\end{cases}$ has been introduced by F. Hoffmann-La Roche & Cie. as a specific against tuberculosis under the name of Thiokol. Inasmuch as there are several isomeric guaiacol sulphonic acids and their salts in the market, care should be taken to designate which one is desired, because it is to be expected that their physiological properties will be different. These differences are to be studied bacteriologically, physiologically and therapeutically.

[Schw. Wochschr. f. Chem. u. Pharm., 36, p. 287.] *E. K.*

Physiology.

Amylolytic Ferments.—Wyatt Wingrave in part corroborates, in part supplements the results of Strauss and Stargard (see p. 315). While looking

for a reliable starch digestant, a comparative examination was made with malt extracts and taka-diastase, the tests being conducted both chemically and clinically.

He summarizes briefly: 1. That taka-diastase is the most powerful of the starch or diastatic ferments and the most reliable since it is more rapid in its action—i. e., "it will convert a larger amount (of s arch) in a given time than will any other amylolytic ferment." 2. That taka-diastase seems to be less retarded in its digestive action by the presence of the organic acids (butyric, lactic, acetic), and also by tea, coffee and alcohol, than are saliva and the malt extracts. This is an important point in pyrosis. 3. That all mineral acids, hydrochloric, etc., quickly stop and permanently destroy all diastatic action if allowed sufficient time and if present in sufficient quantities. 4. That taka-diastase and malt diastase have, like ptyalin, no action upon cellulose (uncooked starch). All starch food should therefore be cooked to permit of the starch ferment assisting nature in this function.

[N. Y. Med. Journ., 68, p. 35; from Lancet, 1898, May 7.] *E. K.*

Oxydases or oxydizing enzymes. — The general course of the action of enzymes or unorganized ferments is understood to be one of the hydrolysis, or decomposition of the bodies attacked by them with the preliminary taking up of water into their molecule. Thus the action of the enzyme emulsin upon amygdalin is expressed by the following equation: $C_{20}H_{27}NO_{11}+2H_2O=C_6H_5CHO+HCN+2C_6H_{12}O_6$. Though no such equation can be written in the case of the action of pepsin on albumen or other proteids, there is reason to think this also is one of hydrolysis. The most notable exception so far known is that of myrosin, which splits up sinigrine into sulphocyanate of allyl, potassium hydrogen sulphate and sugar without the intervention of water.

During the last few years the researches of the French school of physiological chemists have indicated the existence of another group of enzymes, which act by promoting direct oxydation of various substances. These enzymes, the literature upon which has been reviewed by J. R. Green, appear to be distributed somewhat widely in the vegetable kingdom. In this connection attention should be called to long known micro-organisms which have oxydizing power.

The first of this group discovered by the Japanese chemist Yoshida is laccase (as named by Bertrand) which is concerned in the production of lacquer from the crude sap of the lac tree of southeast Asia. The crude juice is obtained by making incisions into the trunks of several species of *Rhus*, and collecting the viscous matter which exudes. It has the appearance of a nearly white creamy liquid, with a faint odor resembling that of butyric acid. On exposure to air it rapidly changes color, becoming brown and ultimately black. Spread on a flat surface it dries with a brilliant

black lustre. The juice is very difficult to experiment with, as it posesses a very irritating property which affects the skin, causing painful eruptions and sores.

Yoshida claims that it is the urushic acid (from urushi, the name of the juice* which is changed by the nitrogenous enzyme to oxyurushic acid. The enzyme looses its oxydizing power when heated to about 60°. Oxygen facilitates the drying of the "acid". Chromic acid accomplishes a like change.

This oxidase seems to exist in a number of plants, but the reliability of the reagent employed for its detection has been questioned. Other oxidases studied are tyrosinase, which occurs in a number of fungi, and oenoxydase which causes a particular disorder in certain wines named *casse* or *cassure*. Oxydases are also supposed to occur in the animal kingdom. The oxidation process long known to take place in blood when shed and exposed to the air, is now explained by some by assuming the presence of an oxidase. The article is accompanied by a bibliography.†

[Science Progress, 7 p. 252.] *E. K.*

Albumins and Some Types of Proteid Digestion. — As the result of an examination of hard boiled egg-albumin and dried serum-albumin, Dr. Gordon Sharp arrives at the conclusion that peptone is absent from both. Egg-albumin is said to yield unaltered albumin, alkali albumin, proto-albumose, a little hetero-albumose, and some crystalline matter of an alkaloidal nature; serum-albumin differs in yielding more hetero-albumose, together with a little deutero-albumose. Papain was found to digest serum-albumin much more readily than egg-albumin, yielding traces of proto and hetero-albumose, abundance of deutero-albumose, but no peptone. With pepsin, in both cases, the digestive process was carried further, traces of true peptone being found. In the presence of yeast, as in the maturing of koumiss, the albumin in milk is partly changed into the higher proteids, but the peptone stage is never reached.

[Pharm. Journ., 61, p. 184.] *E. K.*

Practical Pharmacy.

Green Extracts of the Pharmacopœia. — The results embodied in the paper by W. A. Naylor and J. J. Bryant are the outcome of an investi-

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* Bertrand prefers the term laccol, considering it a polyatomic phenol.

† The field is still new and owing to the complexity of the substances to be delt with and the difficulties of experimentation, comparatively little if any very definite information as to the exact nature of these substances has been gained thus far. If these oxidizing enzymes are as widely distributed as appears to be indicated, it would be of the greatest interest and importance to learn of their distribution in medicinal plants and the role they play in the drying of drugs, i. e. what changes they produce in the chemical constituents of the plants in their treatment as drugs and even during the storage of the drugs and their manufacture into galenicals. *Ed.*

gation as to the feasibility of devising a simple process of assay for the green extracts of belladonna and henbane, and supply data that may assist in arriving at a satisfactary method of standardising those preparations. It is suggested that the strength of extract of belladonna should be fixed at 1 per cent. of alkaloid and that of extract of henbane at 0.2 per cent.

[Pharm. Journ., 61, p. 185.] *E. K.*

Thyroglandin.—The insoluble compounds formed with alginic acid and some of the metals are suggested by E. C. C. Stanford as a new series of therapeutic agents that would probably give rise to new developments in medicine and add considerably to the physician's weapons in attacking disease. Alginoid iron, prepared by adding sodium alginate to ferric chloride, can be administered when other preparations of iron would not be tolerated, as it is quite tasteless, has no astringent effect on the bowels, and is rather laxative than constipating.

[Pharm. Journ., 61, p. 186.] *E. K.*

Notes on Ferrum Redactum, B. P., 1898.—As the result of a careful examination of fifteen commercial samples of reduced iron, E. S. Peck suggests certain alterations in the B. P. directions for the preparation of the substance, and that the tests should be modified so as to ensure the absence of sulphides, of alkaline carbonates, or of more than 1 per cent. of insoluble residue. He proposes also to limit the amount of arsenic present and to vary the details of the official assay process.

[Pharm. Journ., 61, p. 186.] *E. K.*

A Quick Polarimetric Method for the Estimation of Strophanthin in the B. P. Tincture and Extract.—A quick polarimetric method for approximately determining the amount of strophanthin in the official extract and tincture, described by E. Dowzard, consists in reducing the preparation to be assayed to a small bulk, then heating with a little basic lead acetate, evaporating the filtrate and washings to a definite volume, and noting the optical rotation of the liquid in a 200 Mm. tube, using an instrument of the Laurent half-shadow type.

[Pharm. Journ., 61, p. 185.] *E. K.*

Note on Extract of Ginger.—The alcoholic extract of ginger, known in commerce as "gingerine," does not contain the essential oil of the root, but by using acetone as the extracting menstruum, T. H. W. Idris has been able to remove the whole of the aromatic and pungent principles of ginger. The acetone extract is dark brown in colour, of a treacly consistence, intensely pungent, and possesses a full ginger aroma, varying according to the variety of ginger used. It dissolves readily in alcohol, and syrup may be flavored with it by proper diffusion in a suitable temperature without the use of any spirit. [Pharm. Journ., 61, p. 186.] *E. K.*

The Amount of Carbonic Dioxide Available in the Official Granular Effervescent Preparations. — Having prepared and examined some granular effervescent sodium-citro-tartrate, C. S. Dyer concludes that fully 30 per cent. of the acids and sodium bicarbonate used in making the preparation combines during the process of granulation, leaving between 60 and 70 per cent. available for effervescing purposes. He assumes also that the 30 per cent. of sodium bicarbonate so lost combines exclusively with the citric acid during the application of heat in the granulating process. In that case it is evident that the eventual effervescence must be left to the tartaric acid. It is suggested that in official statements of the characters and tests of granular effervescent preparations it should be stipulated that at least 50 per cent. of the bicarbonate present should be available for producing effervescence. [Pharm. Journ., 61, p. 184.] *E. K.*

Kieselguhr. — The leading facts of special interest concerning the various infusorial earths — diatomite — in common use have been brought together by J. Moss, who also indicates particular applications of which those earths are susceptible. As a filtering medium, diatomite freed from organic matter is absolutely indifferent to all but the strongest alkalies at a high temperature, it does not clog up the filtering bag to the same degree as talc or asbestos, and its particles are sufficiently large and irregular in shape to keep apart the particles of albuminoid or starchy deposits, and so allow liquids to pass readily. White diatomite, free from sand and organic matter, makes an excellent basis for dentifrices, and by virtue of its enormous and unequalled absorbent property it is unrivalled as an ingredient of dusting powders. Finally, its use is suggested as a diluent for hygroscopic powders and for binding together drugs that compress with difficulty.
[Pharm. Journ., 61, p. 185.] *E. K.*

Suggested Process for Deodorized Tincture of Opium. — At the Montreal meeting E. L. Patch was requested to put to a test the use of petroleum ether in place of ether for the extraction of narcotine as suggested for the preparation of denarcotized opium. (See Proc. A. Ph. A., 44, p. 127.) He now reports the results of a number of experiments made, of which the final comparison and conclusion are here given:

Comparison. Lots of 100 g. of No. 40 opium assaying 16.1 per cent morphine washed respectively with 1400 cc. of benzinum, ether, acetone and methyl acetate gave the following results:

	Benzin.	Ether.	Acetone.	Methyl Acetate.
Weight of extracted and dried opium.....	91.00	80.500	74.00	77.50
" " morphine in " "	15.05	14.580	14.310	15.19
" " " in washings	none.	0.015	0.580	0.08
" " narcotine, etc., in washings.....	0.18	4.425	4.860	5.16

Conclusion. Benzinum, or petroleum ether, is not adapted for use in washing narcotine, etc., from opium in making deodorized tincture on account of its uncertain character, its low range of solvent power and its disagreeable odor. Methyl acetate or acetone are much better because of greater uniformity and greater solvent power, but are inferior to ether because of their disagreeable odor.

[Read at the Baltimore meeting of the A. Ph. A.] *E. K.*

Medical Preparations with Soluble Silver. — After Credé had first founded a modern, poisonless and non-stimulating silver therapy, through the introduction of the citrate and lactate of silver, (Itrol and Aktol) into the list of new remedies, and through his work on the antiseptic properties of metallic silver, he soon brought, as is well known, the soluble form of silver, Argentum colloidale, within the field of his work. As was expected he obtained extraordinary good results with this modification of the metal. In Nos. 14 and 15 of the Klin. therap. Wschr. several medical preparations are described which Credé made use of.

Unguentum Credé. This ointment of silver has the following composition.

Argent. colloidale	15.0	
Cerae	10,0	85,0
Adipis suilli	90,0	
Aetheris benzoati	10,0	

In the preparation of this ointment it is necessary not to allow the soluble metallic silver to be changed to the insoluble form and thus make a product which is worthless as an internal antiseptic. In the microscopical investigation of such a silver ointment properly prepared, the silver is found to be divided into exceedingly fine particles, an advantage which makes percutaneous resorption easier.

Pilulae Argenti colloidalis. The silver pills are prepared according to two formulas. a) As *Pilulae Argent. colloid. majores.* These larger pills are intended for internal medicinal use and each pill contains 0.01 of colloidal silver, 0.1 milk sugar, glycerin and distilled water each a sufficient quantity. As a dose, in acute cases of sepsis especially where embrocation is entirely impossible, 2 pills, 2 to 3 times a day are prescribed, to be taken when the stomach is empty, together with 100—200 grams of boiled water or tea. The effect of the pills on sepsis is nevertheless inferior to that of the ointment. In cases of dyspepsia and chronic sepsis 1 to 2 pills are prescribed daily. b) As *Pilulae Argent. colloid. minores.* These smaller pills serve the purposes of external surgery, each pill containing 0.05 of colloidal silver, 0.025 of milk sugar, glycerin and distilled water, each a sufficient quantity. Credé applied them with success by laying them in open wounds of a sep-

tical, fungous or tuberculous nature also in ulcers, as well as pustules of the organs of hearing and of the brain cavity.

Bacilli Argenti colloidalis. The cones of silver contain 0.2 of colloidal silver per dose, and are 8 cm. in length. J. Klein recommends these as very suitable in the treatment of infectious uterus affections, as well as of deep ulcers.

Solutio Argenti colloidalis. A solution of silver in distilled water, 1:200 to 1:1000 parts is used for hypodermatic injections, with the Pravaz syringe at intervals of 13—14 days in cases of tuberculous or fungous gatherings in place of iodoform glycerin. Also in all cases of swollen glands (scrophulous, septical and simple hyperplastic) even if softening has already taken place.

Mixtura Argenti colloidalis. 0.5 of colloloid silver, 50.0 of distilled water and 0.5 of albumen to be taken internally or as enema. As a dose a teaspoon- to a tablespoonfull is taken 3 times a day together with a glass of water, just before meals when the stomach is empty.

Intervenular injections with Argentum colloidale. According to the experience of Baccelli, this form of application is to be tried in the proportion of 1:500—2000 in the worst cases of septicemia.

In all the above mentioned forms of colloidal silver, unpleasant after effects, or argyriasis have never been noticed not even with the daily doses of 1 gram of the silver remedy after months of administration.

[Pharm. Ztg., 43, p. 610.] *J. W. Brandel.*

Aromatic Waters.—Hearing complaints that those aromatic waters of the Pharmacopoeia of 1890 directed to be made by solution of oil in water, with the aid of precipitated calcium phosphate, showed signs of fungoid growth more quickly than those made by the cotton process of 1880, H. V. Arny prepared the six waters in question (anise, camphor, cinnamon, fennel, peppermint and spearmint) by both processes and after they had stood seven months in 100 cc. Blake bottles—one set corked and capped, and another simply stoppered with a pledget of absorbent cotton—examined them as to strength of odor and weight of precipitated microscopic organism. This examination showed:

First. That cinnamon, peppermint and spearmint waters made by either process (U. S. P. 1880 or 1890) and preserved in either way described above, are comparably stable as far as fungoid growth is concerned; all these, save peppermint, process of 1890, kept in a bottle stoppered with cotton, being free from confervae.

Second. From the standpoint of strength, the use of a cotton pledget as a stopper is a failure; for all waters so kept were found in seven months, to be either odorless or very faintly odorous.

Third. Eight samples of the twenty-four examined showed appreciable signs of fungoid growth; namely—anise 1890 a: camphor 1880 b; 1890 a and b; fennel 1880 a, 1890 a and b: peppermint 1890 b ("a" and "b" representing waters kept in cork and cotton stoppered bottles respectively), and, of these, six were made by the process of 1890 and only two by the process of 1880. Hence, there seems some reason for the complaint that the waters made by the former process do not keep as well as those made by the latter method.

Appreciating that the terms "faint odor" or "strong odor" was a very vague method of expressing the volatile oil strength of waters, efforts toward a quantitative estimation of strength were made.

In absence of reliable chemical assays of the several oils, attempts were made at physical estimation—extraction of oil with immiscible solvents and separation of the solvent from the oil. All these efforts proved futile, as some of the volatile oil always escaped on evaporation of the solvent, despite every possible precaution.

Indirect comparison of methods of manufacture of aromatic waters was then attempted, using as the oil, that from gaultheria: the volumetric estimation of which by the process of Simonson & Ewing, modified by Kremers & James (Ph. Rev. 16, p. 130), is quite simple. A water of gaultheria was prepared in the pharmacopœial ratio (2 to 1000), by the cotton process of 1880; by the calcium phosphate process of 1890; by simple agitation with water at ordinary temperatures for two days: and by hot solution, performed by heating the oil and water for fifteen minutes in a flask with upright condenser: the finished product in the last two processes being filtered to clearness.

Assay showed that the oil strength of the waters made by the several processes varied from 0.0608 per cent ($^{6}/_{100}$ths of 1 per cent) in the water made by simple cold solution and by the cotton process to 0.08816 per cent (almost $^{9}/_{100}$ths of 1 per cent) in the water made by upright condensation.

Provided an aqueous solution of oil of gaultheria can be taken as typical of all aromatic waters, the following conclusions may be deduced:

First. The quantity of oil actually dissolved by water is so small that various processes have but little advantage over each other on the score of strength of resulting product.

Second. The cotton process yields a product no stronger than that made by simple agitation.

Third. Hot solution yields the most concentrated product and even this, when absolutely clear, will be scarcely stronger than the calcium phosphate product.

[Read at the Baltimore meeting of the A. Ph. A.] *H. V. Arny.*

Ergot Aseptic.—E. M. Houghton read an article before the Michigan State Medical Society, in which he reviews the work of leading pharmacologists who have made extended researches on ergot. He favors the results of Jacobi, "who holds that the active constituent of ergot is the nitrogen-free resin, sphacelotoxin, which occurs in the drug in combination with basic substances, especially with secalin and ergo-chrysins. Jacobi carried out many extensive experiments upon fowls and pregnant animals, the results of which seem to prove that his claims are correct." After reviewing the physiological action of the various constituents of ergot Houghton continues: "In general we may conclude from what has already been said that the desired action of ergot is due to the pharmacologic properties of the contained sphacelinic acid and cornutin, or their salts. It appears well-nigh impossible to separate these constituents, since the solubilities of both are much alike, but for practical purposes this is of little importance, as they have much the same physiologic action and can be readily separated from the sclerotic acid, which has an opposite action."

He experimented on the various menstruums to ascertain which would dissolve the largest amount of sphacelinic acid and cornutin with the least amount of sclerotic acid. The several extracts and the marc were tested by feeding to fowls and results noted. "The menstruum found to produce an extract having the most marked physiologic properties was selected. This menstruum, however, extracts a certain amount of sclerotic acid, which, while it is not harmful for internal administration, was removed from the preparation designed for subcutaneous injection. Since free acids and acid salts are very irritating when administered hypodermically, they were neutralized. The fluid was concentrated until one part of fluid represented two parts of the drug. The finished product was almost entirely non-irritating, but would not keep. Instead of using alcohol or other antiseptic, the fluid was placed in containers holding a sufficient quantity for one injection, the filled and sealed containers to be then sterilized. My experiments lead me to conclude that not more than fifty or seventy five per cent. of the drug or its preparations are suitable for medicinal use. They should be carefully tested for physiological properties. The reaction noticed in roosters seems to be the most reliable." It is to be regretted that the author did not give the menstruum used.

[Therap. Gazette, 22, p. 433.] *A. B. S.*

Literary.

Books and Pamphlets Received.

Verlag von Gebrüder Borntraeger — Berlin. Ascherson's Flora der Provinz Brandenburg. Liefg. I bis III. Flora des Norddeutschen Flachlandes (ausser Ostpreussen) von Prof. P. Ascherson und Dr. P. Graebner. Brochure, pp. 1—480. 1898. M. 6.00.

R. Gaertner's Verlagsbuchhandlung — Berlin. Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neuesten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie mit Hinweis auf Maschinen, Apparate und Literatur. Herausgegeben von Dr. Emil Jacobsen. 37. Jahrgang. 1898. Erstes Halbjahr, erste Hälfte, pp. 1—164, mit in den Text gedruckten Illustrationen. 1898.

Ernst Guenther's Verlag — Leipzig. Schlickums Ausbildung des Apothekerlehrlings und seine Vorbereitung zum Gehilfenexamen nebst einem tabellarischen Repetitorium der Chemie und Pharmakognosie. Neunte, mit Rücksicht auf die neuesten Anforderungen gänzlich umgearbeitete und vermehrte Auflage. Herausgegeben von Dr. C. Gaenge, Dr. C. Jehn und Apotheker R. Schlickum. Erste Hälfte, pp. 1—448. 1898.

J. B. Lippincott Company—Philadelphia. A text-book of chemistry intended for the use of pharmaceutical and medical students. By Prof. S. P. Sadtler and Prof. H. Trimble. Second revised and enlarged edition. Vol. I.—General chemistry, pp. 842. 1898.

Verlag von Veit & Comp.—Leipzig. Die Praxis des organischen Chemikers von Dr. Ludwig Gattermann. Dritte, verbesserte und vermehrte Auflage. Ein Bd., pp. VIII, 323, mit 84 Abbildungen im Text. 1898. M. 6.20.

—— Winke für die pharmazeutische Rezeptur von A. Roderfeld, Apotheker. Brochure, pp. 58. 1898.

—— Die Wolken am Himmel des Lebens. Nach hinterlassenen Papieren meines verstorbenen väterlichen Freundes. Herausgegeben von H. Hager, jun. Brochure, pp. 32, 1898.

Author—London. The character and methods of assay of the official hypophosphites and a note on the mydriatic alkaloids. By H. A. D. Jowett, Assistant in the Wellcome Research Laboratories. Reprint from Pharm. Journal. Pamphlet, pp. 20.

Author—Ames, Iowa. 1. The Russian thistle (*Salsola Kali* L. var. *Tragus* DC. 2. Weeds of corn fields. By L. H. Pammel. Bulletins Nos. 38 and 39; Experiment Station, Iowa College of Agr. and Mechanic Arts. Pamphlets, pp. 24 and 52 resp.

Author—Cambridge, Mass. The conception of species as affected by recent investigations on fungi. Address by Wm. G. Farlow before the Section of Botany, A. A. A. S. Pamphlet, pp. 23.

Author—Chicago. The calling of the pharmacist. By Prof. Oscar Oldberg. Pamphlet, pp. 24.

Reviews.

Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neuesten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie mit Hinweis auf Maschinen, Apparate und Literatur. Herausgegeben von Dr. Emil Jacobsen. 36. Jahrgang. 1897. Ein Band, pp. 678, mit in den Text gedruckten Illustrationen. R. Gaertner's Verlagsbuchhandlung, Berlin. 1898.

This annual has long since demonstrated its usefulness and its right to exist. It was begun in 1862, but since 1881 has been published quarterly, the entire field being covered in the two numbers of each semester. This arrangement not only is an accommodation as far as the subscription is concerned, but also places the desired information at the disposal of the subscriber at an early date.

Although the Repertory by no means ignores those chemicals which are manufactured in enormous quantities it gives special

attention to the socalled smaller chemicals. Chemical analysis also constitutes one of the important chapters and a supplement gives information about secret remedies, adulteration etc. On the whole the annual is one of those works which the pharmaceutical manufacturer, large or small, should have in his library. For an enumeration of the various chapters see p. 187 of vol. 15 of this journal.

E. K.

Die Wolken am Himmel des Lebens. Schmink- und schmucklose Erinnerungen aus dem Leben. Für alle Ehemänner und Familienväter, insbesondere aber auch für Richter, Geschworene, Schöffen und Polizeibeamte. Nach hinterlassenen Papieren meines verstorbenen väterlichen Freundes. Herausgegeben von H. Hager jun. Brochure pp. 32. Ernst Guenther's Verlag, Leipzig. 1898.

The above title is sufficient to arouse the curiosity of any one who is at all familiar with the life and writings of the late Hermann Hager. Certainly no one would expect to find a fragmentary treatise on hysterics under such a disguise. Shortly before his death, this well-known copious pharmaceutical author surprised the world with a letter which was a flattering recommendation of a new remedy against gout based upon personal experience. This approach at quackery was exceedingly distasteful to many of his friends yet was considered pardonable on account of his old age which had evidently been accompanied by a decided failing of mental energy. That his son should now publish some of his notes which have a decided taste of charlatanism and quackery, is greatly to be regretted. We should like to honor the memory of Hermann Hager, but posthumous publications of this kind will simply tend to discredit him.

E. K.

Die Praxis des organischen Chemikers. Von Dr. Ludwig Gattermann, a. o. Professor an der Universität Heidelberg. Dritte verbesserte und vermehrte Auflage. Ein Bd., pp. VIII, 323, mit vierundachtzig Abbildungen im Text. Verlag von Veit & Comp., Leipzig. 1898. M. 6.20.

If this excellent laboratory guide were not already so well known, the fact that it has passed through three editions within four years

would argue sufficiently for its usefulness. For those who are not familiar with the book it may be well to call attention to its contents. The general part contains valuable hints on the various manipulations upon which the success of a preparation often depends, such as crystallization, sublimation, distillation, etc. Directions are also given for the qualitative and quantitative determination of carbon, hydrogen, nitrogen, sulphur and halogen. The special part contains directions for the preparation of substances in the various groups of organic compounds. The directions are sufficiently detailed so that the student can get along without the constant supervision of an instructor. In order to prevent as much as possible the student from getting into a mechanical frame of mind, theoretical considerations are added which emphasize the general importance of the experiment. References to original articles are not infrequently given to enable the student to readily find more detailed information and, no doubt, to stimulate him to liberal reading. An inorganic part is appended with directions for the preparation of some of the more important inorganic reagents which are more or less frequently to be employed in making the organic preparations, such as chlorine, hydriodic acid, phosphorus trichloride, etc. The book is intended as a laboratory guide for advanced students. Its unquestioned success is its own recommendation. *E. K.*

LABORATORY GUIDE IN QUALITATIVE CHEMICAL ANALYSIS. By H. L. Wells, Professor of Analytical Chemistry and Metallurgy in the Sheffield Scientific School of Yale University. John Wiley & Sons, New York. One vol., pp. 180. 1898. $1.50.

To those who think the inductive method best for such a subject as qualitative analysis, this book will be most welcome, for it is consistently inductive and contains good material. Where a whole year can be devoted to this subject and where classes are small or teachers relatively numerous, it will be well worthy of trial by those who think the student will gain more valuable training or knowledge from observation not guided by any exact description of the thing to be observed than by a less consistent inductive method. The reviewer thinks that the observational method can better be given over to the natural sciences, botany and zoology, while the physical sciences physics and chemistry are made of value as showing especially the meaning and use of experimentation, that is the gaining at first

hands of the evidence for or against a statement of fact or of hypothesis previously made. Qualitative analysis as a study may be made experimental in this sense and at the same time kept free from the tendency to mechanical work. *H. W. Hillyer.*

SCHLICKUM'S AUSBILDUNG DES APOTHEKERLEHRLINGS und seine Vorbereitung zum Gehilfenexamen. Nebst einem tabellarischen Repetitorium der Chemie und Pharmakognosie. Neunte, mit Rücksicht auf die neuesten Anforderungen gänzlich umgearbeitete und vermehrte Auflage. Herausgegeben von Dr. C. Gaenge, Docent der Physik in Jena, Dr. C. Jehn, Apotheker, und R. Schlickum, Apotheker. Erste Hälfte. Ein Bd., pp. 448. Ernst Guenther's Verlag, Leipzig. 1898.

The hope that the apprenticeship system will be done away with and that the prospective apothecary will secure a thorough scientific education, like his chemical confrère, at the university before he serves his time of probation, will not be realized for some time. Meanwhile we can but welcome every improvement that is made in the instruction of the apprentice. We have ceased to look upon the pharmacy, where excessive business competition has removed the former laboratory and with it one of the best means of educating the apprentice, as a school of the future pharmacist in any other than a commercial sense. This position it will always have to retain, for no university or college can give its students the every-day experiences of a busy life of the store.

The theoretical or rather the technico-scientific knowledge required by examining boards, however, has not diminished with the scientific degeneration of the pharmacy, as the economic change alluded to above is sometimes called. In order to make up for this deficiency that has made itself felt, the Schule der Pharmacie has been written by as many as four authors, as a scientific foundation upon which the apprentice and assistant are to erect the pharmaceutical superstructure with such assistance as they might receive from their superiors.

One of the most popular guides, however, as is evidenced by the ninth edition now in part completed, is the book before us. The first edition was published by the older Schlickum in 1876 and he lived to see it pass through four editions. Though the first edition had but one author, the latest mentions three on the title page, a practical

necessity at the present time. The first half contains Part I. Physics, evidently by Dr. Gaenge, and Part II. Chemistry. The last form includes several pages of Part III. Botany. The second half of the book is to appear shortly.

Part I is an elementary treatise of 148 pages on physics with occasional directions for experiments, particularly on those subjects pertaining to pharmaceutical technique. Part II is a somewhat similar treatise of 296 pages on chemistry, but the treatment is much less general. It might much more appropriately have been termed chemical pharmacy than pharmaceutical chemistry or chemistry. However, since the book is ostensibly designed as a guide in the preparation for the assistant's examination, it would be wrong to find fault with this style of treatment. The directions for experiments in this part are much more numerous than in the first part. Whatever fault we may find with the legitimate offspring of conditions that are regarded by some of us as having outlived their usefulness, such works as that of Schlickum still perform a valuable function as long as those conditions exist. Those who want a guide with the aid of which they can prepare themselves for state-board examinations will find this book very useful. It is certainly far above any of our vicious quiz compends. American apprentices who read German will find the book of considerable practical value. *E. K.*

Pharmaceutical Review.

VOLUME 16. NOVEMBER, 1898. NUMBER 11.

Editorial.

Ten years ago at the Detroit meeting of the American Pharmaceutical Association, Professor John Uri Lloyd, the then President, reviewed in his thorough manner a number of problems that were beginning to agitate the thoughtful pharmacist's mind. As a clear-cut thinker with a large field of vision, he saw many things at that time which others evidently did not see or refused to see from his point of view. It would almost seem that the association was afraid to grapple with the problems presented by him. The address was referred to a committee, which at a later session requested that, owing to the importance of the problems presented, it be referred to the council. It was thus laid *ad acta*. Meanwhile the very problems discussed by Prof. Lloyd have disturbed the pharmacist's peace more and more until to-day the druggists of this country are in a well nigh feverish state of mind. It is of interest to note that at the recent Baltimore meeting a committee was appointed to which Prof. Lloyd's address has been referred. This committee is to report next year. We would advise the members of the Am. Pharm. Ass'n. to carefully read the address in the Proceedings for 1888,* not only shortly before leaving for the Put-in-Bay meeting next summer, but at their early convenience.

* Or vol. 6, p. 229 of this journal.

We do not believe in doing evil that good may come, but we may be pardoned for not taking a pessimistic view of an unpleasant situation if it promises ultimately to be productive of at least some good. This applies especially to two economic problems which confront the druggist at the present time: the one is the high-way robbery permitted by our patent laws, an evil that has been with us for many years; the other is of much more recent date, viz. the unjust outgrowth of the war tax. We say outgrowth advisedly, for we do not believe that Congress was so base as to expect the druggist to pay all of the special tax which he is now contributing to the coffers of Uncle Sam. After the war had been declared, we were of the opinion that it was too late to quarrel over its *raison d'être* and that each and everyone of us should contribute his mite cheerfully. For this reason we were not in sympathy with those persons who claimed that their cure-all should be free from the stamp tax and that such a tax should be imposed upon bread stuffs and clothing. Unfortunately many a druggist listened to "his friend," the nostrum maker, and as a result Congress did not distinguish between legitimate pharmacy and pharmaceutical quackery. How true these "friends" of the druggist were, was shown by the bribes* offered at least two members of the Committee on National Legislation of the American Pharmaceutical Association. That the editors of several pharmaceutical journals cast their lot with these secret nostrum men in trying to persuade this committee, does not speak well for the editorial advice they have been free to give.

The Committee of the Am. Pharm. Ass'n. had an excellent opportunity to accomplish a bit of pharmaceutical legislation for the betterment of true pharmacy had it but received the proper support. The committee's intention was to secure the exemption from stamp tax of all legitimate pharmaceutical preparations. If the preparations of the U. S. Pharmacopœia and of the National Formulary had been exempted, it would have been in the power of the American Pharmaceutical Association to add in an immediate future all preparations of which the manufacturers were willing to make known the exact formula and to which no reasonable objections could be made. With such a palpable distinction the medical practitioner could no longer prescribe secret preparations without making himself the butt

* Two members have personally informed the writer that money had been offered them to use their influence with Congress in behalf of secret nostrum manufacturers.

of ridicule of all thinking people. Unfortunately, the committee's plan did not prevail, for money was on the other side and many a druggist who to-day complains that the Am. Pharm. Ass'n. never does or did anything for the pharmaceutical practitioner was with "his friend," the secret medicine manufacturer. The true significance of this friendship has, no doubt, been thoroughly ventilated at the St. Louis meeting during the past month.

Whereas the Review has frequently pointed to the injustice of patenting both process and product, some druggists vented their indignation at the extortionate prices exacted by German manufacturers by either smuggling goods themselves or by purchasing them from the smuggler. Whereas the German manufacturers acted within the scope of the law—and we dare say that most American druggists would have been fully as free to demand high prices if in a like favored position—many American druggists violated the law and became subject to fine and in some instances even to imprisonment. They spent their time and money in fighting ill-advised lawsuits instead of influencing their representatives in Congress to have the vicious patent laws corrected. Unfortunately many trade journals humored the druggist in this unwise attitude. The medical practitioner, as a rule, acted fully as inconsistently. He had his own works copyrighted, and prescribed freely the patented chemicals of the German manufacturer, but he would not lend his moral support in favor of a legitimate and an economically reasonable and just patent law with reference to medicinal substances.

The patenting of Behring's antidiphteritic serum seems to have caused consternation in all ranks like the explosion of a bomb in a camp. The injustice of such an act seems palpable to all, because its results are so far-reaching and touch such vital interests. We may not blame Prof. Behring any more than the German manufacturer. It scarcely is becoming the American to boast of his sense of justice in this particular. It has always been American doctrine to get all you could out of the foreigner. We even tolerate American manufacturers in charging much more for their goods here than they sell them at in Europe. We have even sanctioned this high-way robbery of poor Americans by wealthy Americans by overwhelming popular vote. With the same inconsistency that has characterized

the action of many druggists in attacking the German manufacturer the people at large have fought the American manufacturer, because he profited by the laws which they themselves helped enact and support. The laws that permit the German and the American manufacturer to demand extortionate prices in this country, whether they be patent laws or laws inspired by indiscriminate protection, are equally unjust. These laws must be corrected and in the attempt to correct them it is not necessary to abuse those people who have profited by the laws which we have made and tolerated for years, people who have done nothing but what 99.9 percent of all Americans would have done under like circumstances.

Though we are not willing to villify the makers of our present war tax or Prof. Behring, our sympathy is with the retail druggist and the few manufacturers who have shouldered the tax; also with those American manufacturers of antitoxine who are put to considerable anxiety and expense on account of the patent recently granted by our government. We regret the apparent necessity of the present inconveniences and unjust expenditure of well earned money. Nevertheless we may rejoice in the hope that the present situation may be productive of much good in directing the efforts of the American pharmacist in having unjust laws righted rather than in wasting his energies in bucking the law. Furthermore, the stamp tax has brought druggists all over the country together. Some have denounced the law in violent terms, others have appealed to the patriotism of the American druggist to pay even more than his just share of the war tax. The resolutions adopted by state and local associations and sent to the pharmaceutical press may have but little direct influence one way or the other. The mere fact that the druggists have united on an issue is of more consequence. By the time Congress can act the druggists of this country will know more about several economic questions germane to their calling than they ever knew before and can make their demands accordingly. Furthermore, their coming together in local and even national association has fostered something of an *esprit de corps* as well as given them a glimpse of their strength if they but stand together.

In this connection we desire to call special attention to a communication on p. 87 in the Supplement of this issue; also to an abstract on p. 88 from an editorial in the Bulletin of Pharmacy. *E. K.*

Henry Trimble.

By *John Uri Lloyd.*

Professor Henry Trimble was born in Chester, Pennsylvania, May 22nd, 1853, and died of consumption August 24th, 1898. His boyhood was passed in this locality. His first education was in the old "West-town" school. In 1874 he matriculated in the Philadelphia College of Pharmacy, graduating therefrom in 1876. The firm name of Warrington and Trimble, apothecaries, where he was a partner, attests his connection with active business. He proved to be so earnest and enthusiastic a student as to attract the attention of his instructors, and, continuing his studies in the University of Pennsylvania in the scientific department, he became for a period an assistant in the laboratory for organic chemistry.

In 1879, Henry Trimble was selected as the assistant of Prof. Sadtler in the College of Pharmacy. He loved original research and soon developed into a teacher of more than ordinary usefulness. He led the students' mind to thirst for knowledge, and the man who exhibited capacity for such work was soon directed into unexplored fields. His success in these directions is seen in the number of valuable contributions to scientific literature that, during his management, appeared from the laboratory of the Philadelphia College of Pharmacy of which in 1884 he assumed charge, becoming also by the retirement of Prof. Sadtler Professor of Analytical Chemistry.

About this time Prof. Trimble's personality, long appreciated in his college, came more prominently before the public, through an incident that may well be mentioned, as probably it laid the foundation for his work on the tannins.

In 1871, Dr. C. J. Rademaker was thought to have isolated the active principle of *Polygonum Hydropiper*, naming it polygonic acid. In 1884, Prof. Trimble (Am. Journ. Pharm, 1885, p. 22) reported that this substance was a mixture of impure tannic and gallic acids, a point resisted by Dr. Rademaker, but never conceded by Trimble.

After this the special work of Prof. Trimble drifted towards tannins in general. I would say the recreative work for this research was purely a work of love. He sought for tannin-yielding drugs, and, judging from the experience of this writer, who served him when-

ever opportunity presented, continued his search to the very time of his death, for one of the requests recently made of Curtis G. Lloyd, was that he should secure in Egypt specimens of the oak that bears the galls of commerce in order that he (Trimble) might make a chemical examination.

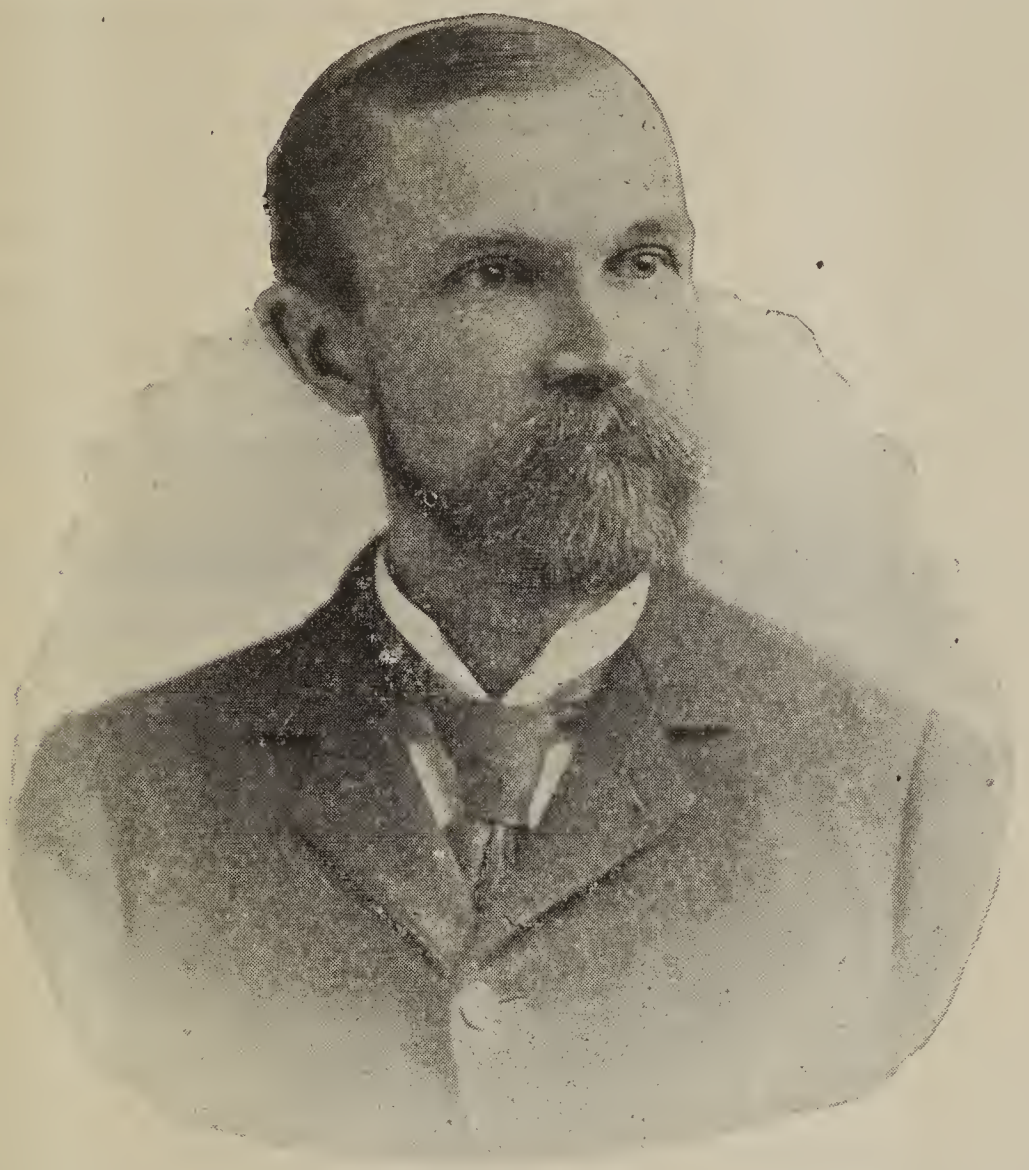
In 1892 the first volume of his work on the tannins appeared, a modest little book of 168 pages, followed in 1894 by the second volume of 172 pages. In this connection it is to be hoped that Mr. J. C. Peacock, the trusted assistant of Prof. Trimble, who knows full well the aims of his lamented preceptor, may continue the work on tannins, carrying forward the interrupted enterprise. In connection with his investigation of this subject, many readers of this paper will remember the extensive variety of tannins exhibited by him at the meeting of the American Pharmaceutical Association of 1893 in Chicago, and it is also on record that in 1897 he forwarded upon request of the writer a beautiful collection to Cincinnati to be shown at a meeting of the Cincinnati Section of the American Chemical Society. This was designed to accompany a paper by Mr. J. Henry Schroeder, one of Prof. Trimble's prize pupils, the subject being "Recent Progress in the Study of the Tannins." It was at the Chicago meeting that he called attention to the value of acetone as a tannin solvent, a menstruum that merits the attention of workers in this direction.

In 1888 he issued a handbook of Analytical Chemistry that went through four editions to pass in 1894 into "The Text Book of Pharmaceutical and Medical Chemistry" by Sadtler and Trimble. A second edition of this work in two volumes appeared from the press just after the death of Prof. Trimble.

On the death of Prof. Maisch in 1893, Prof. Trimble was honored by being appointed editor of the American Journal of Pharmacy, a position he filled to the date of his death with great credit to himself and satisfaction to all his friends.

During his brief life he contributed a large number of original scientific papers and made many careful book reviews. These are scattered throughout the Proceedings of the American Pharmaceutical Association and the pages of the American Journal of Pharmacy. In 1896, in connection with the late lamented Prof. Edson S. Bastin, he commenced a series of contributions in the American Journal of Pharmacy, entitled "Some North American Coniferæ." In this Prof.

Trimble's part was that of the chemistry, particular attention being given the tannins. This work, profusely illustrated, was interrupted in 1897 by the death of Prof. Bastin, who contributed the botanical and microscopical part. It was subsequently reprinted and bound in a pamphlet of 124 pages.



Henry Trimble.*

Prof. Trimble's home was in St. David's, a suburb of Philadelphia, in which he delighted. His family consisted of a devoted wife and three children, all girls. The writer speaks understandingly when he praises the domestic life of the subject of this sketch, for it was his good fortune to know him in his home surroundings. The loss to his circle of personal friends is great, and their sorrow deep. No man can do more as a eulogy than inscribe the fact that as a father Prof. Trimble was perfect.

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* The Review is indebted to Prof. Henry Kraemer and the Alumni Report for the loan of this cut.

In the midst of business, at the age when man should be strongest, his life went out. His was essentially a life of devotion to family, friends and science. In build Prof. Trimble was spare, his expression very pleasant, his demeanor modest in the extreme. The impression he made on the writer was that of one who realized that unless he did his work well as he went along, life would not be spared him to correct errors, or to regain lost opportunities. And thus he labored to the end, uncomplainingly, persistently, enthusiastically, until at the age of but forty-five he was forced to relinquish his pen, bid farewell to his laboratory and to turn from his loved books forever.

Long will the memory of this patient upright man linger in and about the field of his labor. Thousands of the members of his classes carry his personality in their hearts; the century he was not destined to see will miss his footstep, but the result of his efforts will be manifest wherever these men labor.

The death of Professor Henry Trimble takes from science a worker and from humanity a friend.

Notes on two Oils containing Pulegone.

Reported by *Edward Kremers.*

Mentha Canadensis L.

By *Florence M. Gage.*

Oil of wild mint seems to have been first distilled by F. B. Power[1] in 1893 in the laboratories of Fritzsche Brothers at Passaic. The oil prepared by him was described as having a reddish-yellow color and an odor reminding of pennyroyal. Its sp. gr. was 0.94315. It formed a clear solution with twice its volumne of seventy percent alcohol. Dr. Power states that "its chemical composition has not yet been determined." No chemical examination of the oil appears to have been recorded since then.

The statement made in both dispensatories,[2] also in Maisch's Materia Medica,[3] that menthol is obtained from the oil of *Mentha*

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[1] Report of Sch mmel & Co., Oct. 1893, p. 45.
[2] U. S. Dispensatory, ed. of 1883, p. 868.
Nat. Disp., ed. of 1894, p. 1034.
[3] Ed. of 1895, p. 457.

canadensis L., var. *glaborata*, may be misleading in so far as in the index the plant is given simply as *M. canadensis*. Acicular crystals which, however, do not appear to be menthol, have been observed by Prof. Cheney in alcoholic material of the plant.

A quantity of herb was collected by Prof. Cheney along the shores of Lake Monona in July, 1896. The oil was distilled shortly after the collection of the herb, about 150 g. being obtained. It was of a light greenish-yellow color and had the characteristic odor of wild mint. Its sp. gr., determined several months after distillation by Mr. Anderson, was found to be 0.927 at 20°. The mean of three determinations made in May 1897 yielded 0.9267 at 20°, indicating that very little change had taken place. The deviation of polarized light as ascertained by Mr. Anderson was 20° 32′ to the right; a determination made by Miss Gage in 1897 revealed no change, viz. 20° 26′.

Another quantity of herb was collected along the southern shore of Lake Monona in August, 1897. About 175 g. of oil were obtained this time. When dried, the oil was of a reddish-amber color, but did not possess the decided minty odor of the first sample. The sp. gr. as determined was 0.935 at 20°. The oil turned the plane of polarized light only 16° 11′ to the right.

According to Flueckiger's reaction, the characteristic color for thymol, respectively carvacrol, was obtained. The phenol assay of the oil according to either the volumetric or titrimetric methods failed because of the impossibility of breaking up the emulsion with any degree of quantitative accuracy. An attempt to isolate the phenol with a five percent potassa solution yielded only an insignificant product. The amount of either thymol or carvacrol present apparently is very small.

The presence of pulegone was ascertained first of all by v. Baeyer's[4] method. By adding amyl nitrite and a trace of hydrochloric acid to the petroleum ether solution of the oil, crystals of nitroso pulegone melting at 79° were obtained. A control experiment made with pennyroyal oil yielded like crystals melting at 81.5°. Crystals of pulegone-oxime were also obtained corresponding to those obtained from pennyroyal oil.

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[4] Berichte, 28, p. 653.

Pycnanthemum Lanceolatum Pursh.

By *F. W. Alden.*

The first observation from which any chemical conclusion might be drawn is recorded, among others, by Dr. Chas. Mohr[1] in 1897. The fact that both *Pycnanthemum lanceolatum* and *P. linifolium* were described as one species by our earlier botanists, viz. as *Thymus virginicus* L., lead W. G. Correll[2] to test for thymol and carvacrol, identifying the latter.

The first chemical examination of the oil was made by H. C. Barker[3] in 1894, who had at his disposal about fifty grams of the material. He calls attention to the pennyroyal-like odor of the oil and gives its sp. gr. as 0.9361 at 15°. The boiling point determination seemed to indicate that the bulk of the oil boils in the neighborhood of 210 to 215°. The chemical tests made were not characteristic of any substance in particular.

The following year W. G. Correll[2] made another examination of the oil. As already indicated he identified carvacrol, which he found present to the extent of 7.2 p. c. and 9 p. c. respectively in two different oils. The carvacrol was identified as carvacrol sulphonic acid and as dicarvacrol. Barker had already called attention to the similarity in odor of this oil and that of pennyroyal oil. Correll further pointed out the resemblance in specific gravity of the two oils. He could not, however, obtain positive evidence of the presence of pulegone although he separated a fraction boiling between 220 and 230°, the analysis of which yielded figures which corresponded closely with those calculated for pulegone.

In 1896, L. H. Holderness fractionated the oil, deprived of its phenol, under diminished pressure. From one of the fractions he obtained a crystalline oxime that closely resembled the pulegone oxime of Beckmann and Pleissner. Unfortunately Mr. Holderness broke off his work at this point and the oxime was lost.

The principal reason for continuing the work on the oil at the present time was to establish beyond doubt, if possible, the presence of pulegone. Incidentally a comparison of the oils prepared thus far was made.

Mr. Barker obtained his oil from material collected in Delaware

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[1] Proc. A. Ph. A., 24, p. 513.
[2] Pharm. Rev., 14, p. 32.
[3] Am. Journ. Pharm., 66, p. 69.

Co., Pa., during the latter part of July and the earlier part of August, 1893, when the plant was in flower. The material examined chemically by Mr. Correll was collected early in August, 1894, while in full bloom in the low meadows south of Madison. He also distilled a very small quantity of oil from material collected in June, 1895, before the mint was in blossom. The oil examined by Mr. Holderness was distilled from the flowering plant collected during the latter part of the summer 1895, but no record of this oil has been preserved. The material used in this work was collected at different times during the summer of 1897 at different places about Madison.

The following table enables a ready comparison of some of the properties of the oils mentioned.

Operator.	Date of collection.	Locality.	Condition.	Yield.	Sp. gr. at 20°.	α in 100 mm. tube.
Barker.	July & Aug., 1893.	Del. Co., Pa.	Green.	——	0.9361 (at 15°C.)	——
Correll.	Early in Aug., 1894.	Meadows south of Mad.	Green.	——	0.9135	+2.95°
	June, 1895.	?	Green.	——	0.9160	+0.810°
Holderness.	Summer 1895.	Vicinity of Mad.	?	——	——	——
Alden.	June 23, 1897.	Elmside.	Green.	0.29%	0.928	+8.716°
	July 3, 1897.	"	"	0.30 "	0.919	—0.566°
	July 13, 1897.	Shore of Lake Monona.	"	0.48 "	0.923	+11.083°
	Aug. 5, 1897.	U. W. Drive.	"	0.68 "	0.931	+10.308°
	Aug. 5, 1897.	" "	Dry, a month later.	1.80 "	0.918	+8.333°
	Sept. 10, 1897.	Elmside.	Dry, a few days after coll.	1.91 "	——	——
	Sept. 14, 1897.	Greenbush, shore of Lake Monona.	Green.	0.56 "	0.914	+5.966°

With one exception all of the oils distilled last year were tested by Flueckiger's test, a positive result being obtained with each one.

According to Beckmann and Pleissner,[4] pulegone oxime hydrate, commonly known as the pulegone oxime of B. and P., is prepared by the action of hydroxylamine hydrochloride and sodium bicarbonate on the ketone containing oil with a mixture of alcohol and ether as solvent. At times the reaction works like a charm and then with the same material and apparently under the same conditions the oxime fails to crystallize. Besides such oils as pennyroyal oil although

[4] Ann., 262, p. 6.

rich in pulegone almost invariably fails to give a crystalline oxime if the oil is more or less resinified. Better results are usually obtained when such an oil is rectified with water vapor. The substitution of petroleum ether for alcohol-ether has been productive of much better results so far as experience in this laboratory is concerned. The importance of this change in solvent will be readily appreciated if attention is called to the fact that two persons previously failed to obtain pulegone oxime from this oil with alcohol ether as solvent though they had no difficulty in preparing it from rectified penny-royal oil. The first attempt made with petroleum ether as solvent was successful. Crystalline oxime was obtained from several of the samples of oil described above. The crystals melted at 151°. After solidification and cooling, the oxime melted at 117 to 118°. Pulegone oxime hydrate, the socalled pulegoneoxime of B. and P. is reported to melt at 156 to 157°, while the melting point of the true oxime, first prepared by Wallach, is given at 118°.

In all 932 grams of oil were obtained from the 1897 distillation. This oil was shaken with a five per cent aqueous solution of alkali in order to remove the phenol. Owing to the emulsion formed this was a slow and tedious process. The non-phenol portion was separated as carefully as possible and distilled with water vapor, 846 grams of oil being collected. There remained a non-volatile residue of about 30 grams, showing that this experiment had been accompanied with no small amount of decomposition. Inasmuch as the distillate still gave the Flueckiger reaction for carvacrol, the estimate that the oil contained about five per cent of carvacrol is but a crude one, although the Flueckiger test is a delicate one and will indicate the presence of traces of the phenol.

A portion of the non-phenol oil was fractionated into four nearly equal portions under a pressure of about 165 mm. The sp. gr. at 20° and angle of rotation in a 100 mm. tube of each fraction were determined. The results are here tabulated:

Fraction.	B. P.	Yield.	Sp. gr.	α
1.	70—115°	39 ccm.	0.884	−1.23°
2.	115—120°	38 "	0.9015	+7.45°
3.	120—123°	41 "	0.913	+12.33°
4.	123—133°	41 "	0.921	+12.41°

The balance of the oil was fractionated in a similar manner, but inasmuch as water constantly accumulated in the lower fractions in

spite of the greatly reduced pressure (the oil having been dried with anhydrous sodium sulphate before fractionation), the corresponding fractions were mixed and redistilled under ordinary pressure. The following fractions were obtained:

B. P.	Yield.	Sp. gr. at 20°	α
87—160			
160—165			
165—170	11	0.864	— 12.1°
170—175	11	0.868	— 11.6°
175—180	15		
180—185	25		
185—190	21		
190—195	23		
195—200	19		
200—205	72		
205—210	114		
210—215	207	0.917	+ 14.8°
215—220	60	0.956	+ 27.9°

Of fractions one and two only very small quantities were obtained. They were accompanied by a relatively large amount of water. The lower fractions were water white and of an acid reaction. The higher fractions were slightly colored and neutral. The figures for α show that the laevogyrate constituent or constituents were contained principally in fractions three and four. The bulk of the oil came over between 205 to 215°. The two fractions within these limits yielded crystalline pulegoneoxime. Two combustions of fraction 165 to 170 yielded 81.02 and 81.29 p. c. respectively of carbon, and 11.73 and 11.88 p. c. respectively of hydrogen.

Pharm. Chem. Laboratory,
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MONTHLY REVIEW.

Pharmaceutical Technique.

A New Form of Water Blast.*—Bertram B. Boltwood, after discussing the inefficiency of the blast lamps now in use, describes the following device designed by him. In the accompanying diagrams, Fig. I. is a vertical section of the complete apparatus; Fig. II. is a projection from above; and Fig. III. is a section through the middle of the receiver. The essential parts

* The Review is indebted to the Am. Chem. Journ. for the use of the accompanying cut.

of the apparatus are the following: The receiver *A*, having the form of a cylinder 8 inches in height and 6 inches in diameter, divided into three compartments, *b*, *c*, and *d*, by the partitions *p* and *p'*, there being a circular opening 2 inches in diameter between *b* and *c*, and two smaller openings between *c* and *d* (as shown in Fig. I.); the injector tube *l*, 7½ inches long and ⅝ inch outside diameter, provided at the top with the small funnel-shaped projection *g*; the outlet tube *f*, having a diameter equal to that of *l*,

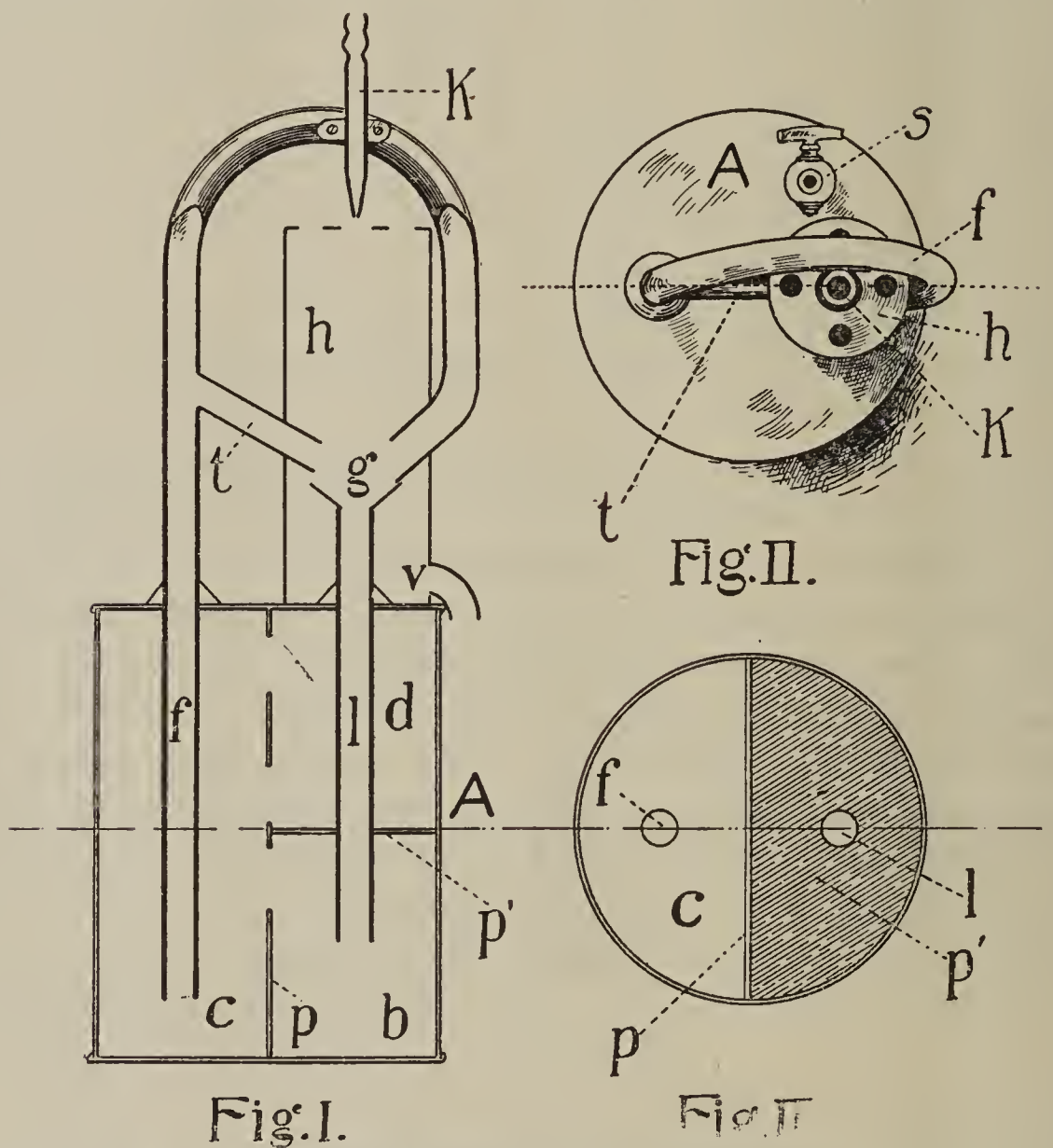

Fig. I. Fig. II.

extending upward from *c* and curving over and downward to *g*; the tube *t* (7/16 inch in diameter) opening into *f* and extending to *g*; the stop-cock *s* opening into *d*; and the nozzle *k*, having an orifice 1/16 inch in diameter, attached to the upper part of the tube *f*. The upper part of the tube *f* is bent slightly out of the plane of the section in order that the axis of *k* and *l* may exactly coincide.

The action of the blast is as follows: The cock *s* is opened and the water turned on. The jet of water issuing from *k* passes through *l* and falls into the compartment *b*. When the level of the water rises above the lower end of the tube *l*, a considerable volume of air is swept into *A*. This air escapes

through *f* and *s* and later through *s* only. The water flows from *b* into *c* through the opening in the partition between them. The cock *s* is now closed and the increase of pressure in the receiver causes the water to be forced up through *f* and into *g*. The jet from *k* now strikes upon the surface of the water in *g* and sweeping with it a large volume of air, drives it downward into *A*. If the cock *s* be now opened, a stream of air of a volume and pressure sufficient to supply a large blast-lamp will be obtained.

[Amer. Chem. Jour. 20, p. 577.] *Oswald Schreiner.*

On the Specific Gravities (apparent) of Solutions of Citric Acid of Different Strength. — A solution containing 60 p. c. of the crystallized acid, or very nearly 55 p. c. of real acid, is nearly saturated at 15° C. and has at that temperature an apparent specific gravity of 1.2753, water at the same temperature being taken as a standard. A one percent solution of the crystals has a specific gravity of about 1.0041 under the same conditions.

The crystals of citric acid have themselves an apparent specific gravity of 1.539, water at 15° C. being standard. In vacuo, with water at 4° C. as standard, the specific gravity is 1.537. The U. S. Dispensatory is in error in stating the specific gravity to be 1.6.

[Read at the Balt. meeting of the A. Ph. A.] *A. B. Lyons.*

On the Gradual Increase in Density of Alcoholic Distillates, or of Mixtures of Alcohol and Water. — Mixtures of alcohol and water, it is well known, undergo a notable contraction of volume. It seems to be generally taken for granted that the condensation takes place practically instantaneously. This, however, is not the case. The writer had occasion to make some exact determinations of alcohol in wines, and observed that the density of the distillates obtained increases materially during the first thirty minutes after the first shaking, to bring it to a homogeneous condition. There is sometimes a further condensation during the next hour and even after a longer time. The condensation made a difference in apparent strength of from one to nearly three tenths of one percent in distillates containing from fifteen to forty percent by volume of alcohol.

The change in density seemed not to be due to escape of dissolved gases. A similar progressive increase in density takes place in mixtures of alcohol and water. The point is one of practical importance in alcoholimetry, and is certainly of much greater consequence than the neutralization of a wine previous to distillation, a precaution quite superfluous in the case of sound wines. [Read at the Balt. meeting of the A. Ph. A.] *A. B. Lyons.*

A Black Finish for Table Tops. — A satisfactory finish for a laboratory table, especially in chemistry and biology, is highly desirable. Where the microscope is used, a black surface is obviously preferable. It is also desirable to have a finish that can resist the action of the common chemicals

which either stain or corrode the ordinary wood tops, otherwise they soon become stained and unsightly in appearance.

A slate or tile top which answers the above demands is expensive in its original cost and also as a destroyer of glassware, and therefore beyond the reach of many. Wood tops, when painted, oiled, or paraffined, present strongly objectionable features. It is possible, however, to dye wood, by a process resembling the "aniline black method" of commerce, cheaply and extremely satisfactorily.

Nearly two years ago, in finishing a table for student use in the bacteriological laboratory of the University of Wisconsin, Prof. Woll, of the Experiment station, recommended the process of ebonizing which he had seen in use in several laboratories in Copenhagen, and it is the directions he secured there which are given below. While the table was being treated, my attention was called to an article which was written shortly before by Prof. Dr. Julius Wortmann* describing the method used in Denmark. Prof. Barnes,† in reviewing this article, briefly described the process as used here as well as that used in the Danish laboratories, although both are essentially the same.

The following solutions are required:

I.

125 grams of copper sulphate,
125 grams of potassium chlorate,
1000 grams of water.
Boil until salts are dissolved.

II.

150 grams of aniline hydroehlorate,
1000 grams of water.
Or, if more readily procurable,
120 grams of aniline,
180 grams of hydrochloric acid.
1000 grams of water.

By means of a brush apply two coats of solution No. I. while hot, the second coat as soon as the first is dry. Then apply two coats of solution No. II. and allow the wood to thoroughly dry. A coat of raw linseed oil is next applied. It is best to use a cloth instead of a brush so as to get only a very thin coat of the oil. The desired amount of polish is now given the wood by rubbing in the oil. In the treatment with the oil the deep black color is partially brought out, although this does not uniformly appear until the table has been thoroughly washed with hot soap suds. This takes out the superfluous chemicals.

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* Bot. Zeitung 54, p. 326.
† Bot. Gaz. 24, p. 66.

The finish thus secured is an ebony black which is permanent and very highly resistant to the action of chemicals, such as acids and alkalies, even concentrated sulphuric acid having little or no effect if quickly washed off.

The aniline dye stains may also be readily removed by the application of some solvents, as alcohol.

It is not only possible to treat new table tops in this way, but old ones take nearly as good a finish. In this case the old oil or paint is planed off and the surface is treated as new wood.

The tables in the bacteriological laboratories here are practically in as good condition to-day, after use by students during two school years, as they were when finished.

To keep the surface constantly in good condition it is only necessary, after a thorough washing, to rub on a light coat of oil. The expense is trifling. The cost of both solutions, in the quantities given above, will not be over fifty cents, and this amount will cover at least ten square yards of surface. [Journ. of Appl. Microscopy.] *W. D. Frost.*

Chemistry.

The Application of Tannic Acid for the Isolation of Alkaloids.—The use of glycerotannic acid as suggested by Kippenberger for the isolation of alkaloids in forensic chemistry has been productive of good results in this branch of chemical analysis. The author, however, does not find that this method possesses any advantages over the iodine method in the assay of narcotic drugs and galenicals. [Pharm. Ztg., 43, p. 693.] *E. K.*

The Use of Iodine-Potassium Iodide Solution in the Isolation of Alkaloids. Upon the addition of an aqueous solution of iodine in potassium iodide to a salt of an alkaloid, the hydriodide of the periodide of the alkaloid is precipitated quantitatively. The precipitate is taken up with acetone and the alkaloid is brought into aqueous solution by the addition of water and then acid in excess and finally by the evaporation of the acetone. By rendering the aqueous solution alkaline, the alkaloid can be shaken out with an immiscible solvent. Kippenberger supplements his earlier* work by emphasizing that this method is not directly applicable to narcotic extracts, the method of preparation of which does not exclude proteïds. Substances like choline, betaïne and possibly neurine which effect the result in the ordinary process of titration with acid, do not vitiate the results according to Kippenbergers's method, because any precipitates first formed are again brought into solution by the reagent. Details for the method of procedure not only in general, but for a number of specific extracts and tinctures are given which do not permit of abstraction.

[Pharm. Ztg., 43, p. 692.] *E. K.*

* Pharm. Ztg. 1896, No. 93.

Phytochemical Investigations. — The author, van Rijn, after calling attention to the youth of this department of chemical research and to the various by-paths which phytochemists have largely trodden, emphasizes the necessity of paying more attention to purely theoretical problems. He then takes up one of these problems, viz. comparative phytochemistry, and with the aid of a number of illustrations explains the meaning of this term. He is firmly of the belief that the chemical composition of a plant is very closely related to its genetic relationship. The occurrence of the same chemical substance in widely related plants he considers as no objection, but regards the present want of detailed knowledge as the only obstacle in the way of a phytochemical system. He even regards the present meagre knowledge as sufficient evidence to make plausible the possible necessity of rearranging not only species but genera according to chemical, rather than morphological facts. The article is well worth reading. [Pharm. Ztg., 43, p. 682.] *E. K.*

The Detection of Mono-carbonate in Bi-carbonate of Sodium.—Melchior Kubli criticises the test of the German Pharmacopœia which requires that no red color be developed at once upon the addition of three drops of phenolphtalein solution to a solution of 1 gm. of the specimen in 20 cc. of water, prepared at a temperature not exceeding 15° C. without agitation or, if a faint color does appear it shall be discharged by the addition of 0.2 cc. normal hydrochloric acid. According to the author, sodium bicarbonate is decomposed whenever it is brought in contact with water, the extent of decomposition depending only upon volume of water employed and the temperature of the experiment; it is further increased by agitation. When upon 3 gm. of salt, contained in a flask, 50 cc. of water at 5—6° C. are poured, the flask stoppered, solution effected by inclining the bottle, the decomposition is almost nil and fairly true results are obtained if the solution be tested at once. The author further finds that the test is not sufficiently delicate, more than 2 percent, or according to Thümmel* 4 to 5 percent of normal carbonate escaping detection. A new test is proposed depending upon the precipitation of a solution of quinine hydrochlorate of definite strength by a bicarbonate containing more than 2 percent of monocarbonate. 3 gm. of bicarbonate are dissolved in 50 cc. of water, the temperature being kept below 10° C., with precautions as already described. By means of a pipette 10 cc. of this solution are added to 10 cc. of a solution of quinine hydrochlorate, freshly prepared by dissolving 0.4 gm. pure hydrochlorine in 100 cc. of water, without filtering it. If the sample contains less than 2 percent of monocarbonate, the solution is clear at once or becomes so if mixed by gently inclining and turning the test-tube.

[Arch. d. Pharm. 236, p. 321; from Chem. Centralbl. 1898, 11, p. 641.]. *W. A. P.*

* Pharm. Centr. H. 1891, p. 86.

The Estimation of Tartaric Acid in Presence of Citric Acid.—Being called upon to estimate tartaric acid in the presence of citric acid, Arthur Borntträger employs Warington's method[1] as modified by Grosjean[2] and the author,[3] omitting the addition of potassium oxalate, added to decompose calcium salts present, as here but traces had been found. 20 gm. of the substance, containing about 16—17 gm. tartaric acid plus citric acid in 100 gm., were dissolved in water, neutralized with potassium hydroxid, 5 gm. potassium chlorid added and then sufficient water to make about 50 cc. To this 10 cc. of a 50 percent solution of citric acid was added, stirred until precipitation ensued and set aside over night. In the morning the precipitate was filtered, washed thoroughly with a 10 percent solution of potassium chlorid freshly saturated with potassium bitartrate and finally twice with 10 percent potassium chlorid containing no bitartrate. The precipitate was finally titrated with alkali standardized upon pure cream tartar.

In his former publications the author has shown that, while presence of neutral potassium citrate would prevent the complete precipitation of potassium tartrate, the addition of potassium oxalate would so far overcome this that, from a solution containing in 55 cc. 1.5 to 4 gm. bitartrate, 5 gm. potassium chlorid and 1.5 gm. neutral potassium oxalate, on the addition of 3 gm. citric acid with the usual manipulations, 99.41 to 99.72 percent would be recovered. It now remained to be demonstrated whether in the absence of potassium oxalate and with varying amount of citric and tartaric acid satisfactory results could be obtained. An extended series of determinations is offered showing that the method is far from satisfactory, as is evinced by the following table, where 50 cc. of solution, containing 5 gm. potassium chlorid and the indicated amounts of citric acid and bitartrate were precipitated with 3 gm. of citric acid and the estimation finished as in the first determinations:

Citric acid before neutralizing.	Bitartrate found, when there were added:			
	1 gm.	2 gm.	3 gm.	4 gm.
0.5 gm.	0.9860 gm. (98.60 p. c.)	2.0280 gm. (101.45 p. c.)	—	—
1 "	0.9860 gm. (98.60 p. c.)	2.0097 gm. (100.49 p. c.)	3.0391 gm. (101.30 p. c.)	3.9324 gm. (98.31 p. c.)
2 "	—	1.9807 gm. (99.04 p. c.)	2.9609 gm. (98.70 p. c)	3.8929 gm. (97.32 p. c.)

[1] J. Chem. Soc. 28, p. 973.
[2] J. Chem. Soc. 35, p. 341.
[3] Ztsch. f. anal. Chem. 25, p. 327; 26, p. 379.

In view of the foregoing it is recommended to use of the substance under examination an amount, the acidity of which corresponds to about 3 gm. of citric acid, and to add to this 5 gm. potassium chlorid and, after neutralization with potassium hydroxid solution, to bring the volume up to about 50 cc., and then to precipitate with 3 gm. citric acid. If the amount of tartaric and citric acid so found does not come within the ratio indicated by the table, a new determination is to be made, using, if an excessive proportion of tartaric acid was found, a smaller weight of the original substance and adding before neutralization a requisite quantity of citric acid. If in the first determination less than 1 part of tartaric acid to 2 parts of citric acid was found, then the method is no longer applicable, unless, indeed, a weighed quantity of bitartrate be added and later again subtracted.

[Zeitsch. f. anal. Chem. 37, p. 477.] *W. A. P.*

Identification of Aniline Derivatives.—I prepared a paper for the Baltimore meeting of the A. Ph. A. with "The Differentiation of Coal Tar Products as its caption. Before the scientific section of that body I gave, simply, an abstract of the paper, presented a number of typical residue-pictures and tried to demonstrate the simplicity and efficiency of my method. I believe the practicability and ready application of the scheme appealed to nearly all present and my statement advocating its usefulness was accepted by a large majority. The criticisms, although pronounced, were of such a superficial kind as not to bring discouragement. Additional experiments since the meeting reassure me in my contention, that any person with ordinary intelligence and slight analytical experience, having satisfied himself, by noting its characteristic physical properties, that the substance under consideration is of synthetic origin and belongs to the popular so-called new remedies, can easily eliminate its associates and finally, if in possession of standard substances, fully identify it. This, of course, refers to simples; the plan cannot, I think, be used for mixtures, unless the mixture is made after a fixed formula and thereby becomes a standard with the possibility of having a fixed specimen with which the mixture in question can be compared. By this, I mean to convey the idea that such mixtures as antikamnia, ammonol and sedapyrine can be as easily identified as can acetanilid, phenacetine or sulfonal. But I do not pretend to say that antikamnia could be discovered if mixed with unknown quantities of quinine or morphine, nor could phenacetine be found and fully identified, if a constituent of a mixture of unusual proportions.

The plan proposed is to make 2 p. c. alcoholic (95 p. c.) solutions of the more popular remedies on the market and place about 5 cc. of any such solution in each porcelain dish; use, say, three. Dishes of 60 cc. capacity, furnished by Whitall & Tatum Co., have proven most satisfactory. Ignite all at once and note process of burning, formation, character and behavior

of rings and, specially, watch residue; observe how all agree. Proceed in the same way with the solution of another product and note in this instance, also, the uniformity of these results, yet they are found to be unlike the first series. Continue these experiments until fairly familiar with the behavior of them all. Should it be found that, in some instances, great similarity exists, as is notably the case with acetanilid and kyrofine, add to the solution of each one an equal quantity of solution of phenacetine. Ignite 5 cc. of the two mixtures in separate dishes and witness how easily it is to differentiate now.

These results can be fairly well described and, in many instances, graphically enough to enable the operator to identify the substance treated. I have found more depends upon the size and character of dish than might be supposed and experience has also taught me that the quantity of liquid used must bear a relative proportion to size of dish. For further details and data I respectfully refer to the original paper as it will appear in the 1898 Proceedings of the American Pharmaceutical Association.

I see no need of using this method for substances soluble in water, excepting as a verification of other tests, but it will, I think, be found interesting to notice how the different alkaloids behave when treated as I suggest. I have experimented some little with these and am made to wonder still, how it is possible that substances with such small differences in ultimate products should furnish such unusually different residues.

[Read at the Balt. meeting of the A. Ph. A.] *H. P. Hynson.*

Botany and Pharmacognosy.

Lichenon Cascara Sagrada Bark.—Senft has recently described (Pharm. Post 30, p. 431) lichens found in cascara sagrada bark mentioning as characteristic for this bark *Thelotrema Rhamni Purshianæ* S., *Ochrolechia Rhamni Purshianæ* S. and *Arthonia complanata* Muell.

Edo Claassen in a note to the editor states that he has found *Pertusaria leioplaca* (Ach.) Shaer. on this bark a number of times, a form not mentioned by Senft. [From a written communication.] *R. H. T.*

Solanum Carolinense.—Dr. E. James Milwain of Jackson, Tenn., in a paper before the joint session of the Alabama and Tennessee societies states that *Solanum Carolinense* is of no therapeutic value in acute cases when given in small doses, but in doses of one-half to one drachm its curative properties are effective. In spasms in children due to any cause, it is a specific. Dr. Milwain makes an oil by macerating the green berries in sweet oil for a fortnight. He reports that "in the lying-in room a tampon saturated with the oil of *Solanum Carolinense* firmly applied against the cervix will produce painless dilatation as nothing else will."

[Bull. of Pharm. 12, p. 316.) *R. H. T.*

Applications of the Theory of Electrolytic Dissociation.—Probably few theories have been called into use in so many directions as that named in the title and have been so useful in leading investigation into fruitful fields. Dr. Harry C. Jones has brought together in the form of a brief summary an historical sketch of the development of the theory and the chief results of its application. It is manifestly out of the question to further summarize the matter and the reader is referred to the original article.

[John Hopkins Hospital Bulletin, 9, p. 136.] *R. H. T.*

"Husa," a Remedy for the Opium Habit.—W. W. Winthrop reports on the valuable properties of "husa," an undetermined plant supposed to be a cryptogam of one of the higher orders. It is collected in the everglades of Florida where it grows in clumps in moist, shady places.

This drug, collected by a few hunters in the everglades, is said to be a perfect antidote for snake bites, stings of insects, etc., as well as for narcotic poisons.

Its chief usefulness is said to lie in its remarkable effectiveness against the opium habit. It sustains the patient while the system frees itself from the drug and is given in graduated doses to avoid the formation of a "husa" habit. Dr. Winthrop has seen cases of a great many years standing cured in about ninety days and in no case has the remedy been known to fail.

The active principle, husin, consists of white, very light, flocculent, minute crystals which agglomerate to form lumps when exposed to the air. It is as poisonous as atropine or strychnine, one-fourth of a grain causing a violent beating of the heart accompanied by a state of mental elation. This stage is followed by quiet, languor and sleep. It is almost a specific for tetanus, especially when mixed with South Carolina horse nettle.

It is certainly to be hoped that this new remedy may be further studied.

[New York Med. Journ. 67, p. 538 and p. 906.] *R. H. T.*

Collection of Gutta Percha.—In the course of an interesting article on gutta percha, Dr. E. F. A. Obach describes among other things the method pursued by collectors of gutta percha.

The tree furnishing this product, *Palaquium gutta*, is large, having a cylindrical trunk with a diameter of two or three feet and a height of about eighty feet. This tree is confined to a comparatively small geographical area which comprises the southern part of the Malay Peninsula and the islands of Borneo and Sumatra.

The latex or milky juice is contained in single cells which are arranged in longitudinal rows and chiefly occur in the inner parts of the bark. They occur also in the pith and leaf tissues, but not in the wood. To obtain the latex, the Malay invariably fells the tree, chops off the branches and cuts rings in the bark at distances of from twelve to eighteen inches along the trunk. The juice exudes, and soon fills the grooves. In the better kinds of

trees it quickly coagulates and is scraped off with a knife. In inferior trees coagulation takes place less promptly and the juice has to be caught in cocoanut shells placed beneath. After collection, the latex is gently boiled, either with or without adding water and is finally made into blocks of various shapes for the market.

The yield of latex varies with the tree, the method of collection and the season of the year. The latex is said to run more freely directly after the rainy season is over, and a much larger yield is said to come from a felled tree than from one merely incised. For this reason, the Malays always employ the destructive method of felling the tree.

The average yield of gutta percha from an adult tree of good quality is less than two and a half pounds, the value of the total yield of such a tree being only about 8 s. 9 d.

Bark, sawdust, ground sago, stones, etc., are worked into the blocks sent to market. [Imp. Inst. Journ 4, p. 137.] *R. H. T.*

Different Methods of Preparing Kino.—W. W. Will and G. T. Brauch have examined several specimens of kino from the official source, *Pterocarpus Marsupium*, which had been prepared in various ways, and find that great differences exist. Their results are summarized here.

No. 1. After collection the juice was boiled and then dried, several weeks being required by the latter process. The resulting kino appeared in small angular pieces, brittle and dull reddish-brown in color. It was found to contain 39.3 percent tannin and yielded 1.3 percent of ash.

No. 2. After collection the juice was dried in vessels heated by steam, but about four hours being consumed by this process. The kino was made up of small, angular pieces, very brittle, light reddish-brown in color, with clear, bright surface and transparent edges. Tannin content, 49.17 percent; ash, 1.1 percent.

No. 3. After collection the juice was spread in layers and exposed to the sun, drying in about twelve hours. The kino consisted of small, angular pieces, regular and even in size, in reddish-black brittle fragments; surface very bright. This kino contained 49.76 percent tannin and 1.0 percent ash.

No. 4. The juice was spread in layers one-fourth inch thick and dried in the shade, twenty-four hours being consumed in so doing. This kino consisted of thin, flat laminæ, clear and transparent, with brilliant red color; the thicker fragments being perfectly transparent at the edges. Tannin content, 45.29 percent; ash, 1.3 percent.

No. 5. Malabar kino derived from unboiled juice. Kino in small angular fragments and thin laminæ, clear and transparent, with bright, ruby-red color. Tannin content, 55.13 percent; ash, 0.8 percent.

No. 6. Malabar kino obtained from boiled juice. Kino in angular frag-

ments very variable in size, dull, dark-brown in color. Tannin content, 41.12 percent; ash content, 0.7 percent.

A kino from *Pterocarpus erinaceus* gave 56.2 percent tannin.

Artificial heat and sun's heat give results that show a very close agreement in regard to quality of product. It is a distinct disadvantage to boil the juice prior to drying. [Chem. & Drug. 53, p. 56.] *R. H. T.*

The Ash of Vegetable Drugs. II.—In the April number of the current year of the Review appear the results of the first of a series of articles by Dr. J. Hockauf on the ash of vegetable drugs. Below are presented the results obtained in later investigations.

Name of Drug.	Total ash.	Ash insol. in HCl.
Souchong tea, extracted	4.45 p. c.	0.40 p. c.
Gunpowder tea, "	8.10 "	1.00 "
Hyson, J. "	2.99 "	0.23 "
Brazilian tea, "	3.47 "	0.12 "
Anagraecum fragrans, lvs.	7.03 "	0.06 "
Salix alba, lvs	10.63 "	trace
Salix pentandra, lvs.	7.50 "	"
Populus nigra, lvs.	8.20 "	0.85 "
Quercus pedunculata, lvs	4.55 "	0.27 "
Ulmus campestris, lvs	10.17 "	2.64 "
Morus alba and *M. nigra*. lvs	14.14 "	1.71 "
Chloranthus inconspicuus, lvs.	18.33 "	5.00 "
Anemone hepatica, lvs	11.06 "	1.08 "
Paraguay tea, Maté lvs.	5.62 "	0.50 "
" " from Merck	12.20 "	7.45 "
Platanus orientalis, lvs	10.15 "	1.19 "
Pirus Malus, lvs. (apple)	9.19 "	0.16 "
Sorbus aucuparia, lvs., air dry	5.66 "	0.10 "
" " dried at 100°	12.46 "	2.35 "
Rose leaves	7.55 "	0.42 "
Rubus species, lvs	7.86 "	0.63 "
Fragaria vesca, lvs.	6.61 "	1.83 "
Prunus Cerasus, lvs.	7.46 "	0.02 "
Prunus spinosa, lvs.	9.47 "	3.15 "
Epilobium angustifolium, lvs	7.70 "	0.03 "
Vaccinium Myrtillus, lvs	4.12 "	trace
Vaccinium Vitis idæa, lvs	2.90 "	0.10 "
Arctostaphylos officinalis, lvs.	2.60 "	0.13 "

It will be noticed that the leaves here studied are either used as substitutes for tea in some part of the world or occur mixed with tea.

In some leaves, the ash after treatment with HCl left silicious skeletons of the cell walls of certain tissues. Epidermis, mesophyll and vessels left such skeletons in *Anagræcum*, *Quercus*, Maté and *Platanus;* in *Morus* species, the epidermal walls, bases of hairs, *Nebenzellen* of trichomes, pedicels of cystoliths and adjacent membranes. Such silicious remains were lacking in *Epilobium* and *Vaccinium* sps.

[Zeitschr. d. allg. oesterr. Apoth.-Ver., 52, p. 321.] *R. H. T.*

Medicinal Plants of West Africa.—F. Moeller in a recent article discusses the medicinal plants of West Africa.

Malvaceæ. *Abutilon Indicum* Don., an emollient. *Hibiscus Abelmoschus* L., seeds fragrant. *Thespesia populnea* Corr., oil of the seeds used for skin troubles. *Gossypium arboreum* L., bark an emmenagogue.

Tiliaceæ. *Corchorus fascicularis* L., a tonic.

Rutaceæ. *Zanthoxylon Senegalense* DC., bark an aromatic.

Simarubeæ. *Brucea antidysenterica* Mill., root used for dysentery. *Balanitis Aegyptiaca*, fruits purgative, seeds anthelmintic.

Burseraceæ. *Balsamodendron africanum* Arn., bdellium.

Meliaceæ. *Caropa guyanensis* Aubl., bark a tonic. *Khaya senegalensis* Juss., bark a tonic and febrifuge.

Chailletiaceæ. *Chailletia toxicaria* Don., seeds poisonous.

Celastrineæ. *Celastrus Senegalensis* Lam., bark of root used for dysentery. *Schmidelia africana* DC., fruits used for tape worm.

Cinnaraceae. *Rourea santaloides* W. A. A., root a tonic.

Umbelliferae. *Hydrocotyle asiatica* L., intestinal troubles and leprosy.

Leguminosae. *Crotolaria verrucosa* L., anthelmintic and laxative. *C. retusa* L., for colic and flatulence. *Indigofera enneaphylla* L., juice antiscorbutic and diuretic. *Thephrosia purpurea* Pers., diuretic, laxative and expectorant. *Desmodium gangeticum* DC., febrifuge and for colds. *D. triflorum* DC., for dysentery. *Clitoria Ternata* L., laxative. *Erythrina senegalensis* DC., antisyphilitic. *Physostigma venenosum* Balf., for headache and strychnine poisoning. *Vigna sinensis* Endl., for eye troubles.

Ficoideae. *Trianthema monogyna* L., a purgative. *Mollugo cerviana* Ser., sudorific and skin remedy. *Mollugo spergula* L., stomachic. *Gisekia pharnacioides* L., vermifuge. *Dalbergia melanoxylon*, for toothache. *Pterocarpus orinaceus* Poir., contains wound rosin. *Sonchocarpus sericeus* B. H. A. K., for intestinal difficulties.

Caesalpiniaceae. *Cassia absus* L., for eye troubles. *C. alata* L., purgative. *Bauhinia tomentosa* L., for dysentery, liver troubles and worms, also vulnerary. *B. reticulata* DC., astringent, febrifuge and vulnerary. *Copaifera Guibourtiana* Benth., vulnerary.

Mimoseae. *Acacia Adansonii* Guill. et Perr., for dysentery, scurvy and eye troubles. *A. Arabica* Willd., astringent. *A. Senegal* Willd., for dysentery.

Crassulaceae. *Bryophyllum calycinum* Salisb., oil a sedative. *Cotyledon orbiculata* L., for epilepsy.

Rhizophoraceae. *Rhizophora mucronata* Lam., astringent.

Combretaceae. *Quisqualis Indica* L., an anthelmintic.

Lythrareae. *Ammonia baccifera* L., leaves a vesicant.

Rubiaceae. *Sarcocephalus esculentus* Afzel., *Gardenia Thunbergii*, *Canthium Afzelianum* Hiern., for ulcers. *Ixora radiata* Hiern., vermifuge.

Dipsaceae. *Scabiosa succisa*, for diarrhœa.

Compositae. *Vernonia cinerea* Less., sudorific. *Grangea maderaspatana* Poir., stomach remedy. *Blumera lacera* DC., for weak digestion. *Pluchera lanceolata* O. A. H., laxative. *Sphacranthus Indicus* L., anthelmintic and diuretic. *Helichrysum auriculatum* Less., stomach remedy. *Aspilia latifolia* O. A. H., vulnerary. *Emilia sonchifolia* DC., for eye and intestinal troubles. *Senecio Tedlici* O. A. H., vulnerary. *Dicoma tomentosa* Cass., for fevers.

Myrsineae. *Maesa lanceolata* Forsk., anthelmintic.

Apocynaceae. *Strophanthus hispidus* DC., heart remedy.

Convolvulaceae. *Ipomoea digitata* L., tonic. *I. hederacea* Jacq., laxative.

Scrophularineae. *Herpestris Monniera* H. B. A. K., diuretic. *Vandellia diffusa* L., emetic.

Bignoniaceae. *Spathodea campanulata* Beauv., for sores. *Kigelia pinnata* DC., for dysentery.

Pedalineae. *Sesamum Indicum* DC., emollient.

Acanthaceae. *Poristrophe bicalcyculata* Nees., tonic and skin remedy, also used in jaundice and amenorrhœa.

Verbenaceae. *Lippia nodiflora* Rich., for spermatorrhœa and digestive troubles. *L. adoensis*, febrifuge and sudorific. *Stachytarpheta Indica* Vahl., for dysentery. *Avicermia africana* Beauv., skin remedy.

Ranunculaceae. *Clematis grandiflora* DC., vesicant.

Anonaceae. *Anona muricata* L., fruit tree. *Uvaria Chimæ* Beauv., purgative.

Menispermaceae. *Tinospora Bakis* Miers, diuretic and febrifuge. *Cocculus Leaeba* DC., antipyretic. *Cissampelos Pareira* L., tonic.

Cruciferae. *Brassica juncea* Hook., oil producing plant.

Capparideae. *Crataeva religiosa* Forst., tonic and antirheumatic.

Violarieae. *Sauvagesia erecta* L., for pain in the eyes and intestinal troubles.

Bixineae. *Cochlospermum tinctorium* Rich., for amenorrhœa.

Onagraceae. *Jussiaea villosa*, vermifuge and laxative.

Cucurbitaceae. *Luffa acutangula* Roxb., laxative. *Momordica Balsamita* L., with oil-containing fruits. *Cucumis Prophetarum* L., stomachic. *Bryonia laciniosa* L., bitter tonic. *Zehneria scorbiculata* Hochst., sedative and anthelmintic. *Sicyos angulatus* L., bitter diuretic.

[Ber. Deutsch. Pharm. Ges., 8, p. 93.] *R. H. T.*

Poisoning by Epilobium hirsutum.—A three year old child after eating this plant went into a comatose state with accompanying cramp-like spasms. No albumen was found in the urine. The pupil was contracted. After taking castor oil and potassium bromide, the child recovered completely after a few days.

[Apoth. Zeit. 13, p. 313; from Brit. Med. Journ, 1897, p. 707.] *R. H. T.*

On the Scientific Synonymy of our Indigenous Plants.—A new check list of North American plants containing 14,534 entries has just been published by Heller, embodying the results of the efforts of botanists in this country to establish on a firm and enduring basis the nomenclature of their science. The year has seen also the completion of Britton and Brown's Flora of the Northern United States, a truly monumental work. Owing to want of coordination in the work of botanists in former years, great confusion had arisen in botanical plant names. We may hope that that confusion is now at an end, and the time is opportune for those of us who take our botanical names only on authority to correct our vocabulary. I have accordingly made a list of botanical names that have been erroneously applied in current botanical literature, with the corrected names as given in the authoritative publication of Britton and Brown.

From this list I select here as of special interest to pharmacists the names of plants more or less used in medicine. The names on the left are the current ones, or those at least which have been familiar within twenty-five years. Those on the right are the names now accepted by botanists.

Current Names.	Corrected Names.
Aspidium marginale Sw.	Dryopteris marginalis (L.) A. Gray.
A. Filix-mas L.	D. Filix-mas (L.) Schott.
Larix Americana Michx. (1803)	Larix laricina (Du Roi 1771) Koch.
Juniperus Virginiana var. humilis Hook.	Juniperus Sabina L.
Taxus baccata var. Canadensis (Willd. 1806) A. Gray.	Taxus minor (Michx. 1803) Britton.
Symplocarpus fœtidus Salisb.	Spathyema foetida (L.) Raf.
Triticum repens L.	Agropyron repens (L.) Beauv.
Polygonatum giganteum Dietr. (1835)	Polygonatum commutatum R. & S. (1830)
Cypripedium pubescens Salisb. (1791)	Cypripedium hirsutum Mill. 1768.
Comptonia asplenifolia Ait.	Comptonia peregrina (L.) Coulter.
Alnus serrulata Willd. (1805)	Alnus rugosa (Du Roi 1771) Koch.
Castanea vesca var. Americana Michx. (1803)	Castanea dentata (Marsh. 1785) Borkh.
Nuphar advenum Ait.	Nymphæa advena Soland.

Current Names.	Corrected Names.
Nymphæa odorata Ait.	Castalia odorata (Dryand) Woodv. and Wood.
Nymphæa tuberosa Paine.	Castalia tuberosa (Paine) Greene.
Actæa spicata var. rubra Michx.	Actæa rubra (Ait.) Willd.
Hepatica triloba Chaix. (1786)	Hepatica Hepatica (L. 1753) Karst.
H. acutiloba DC. 1824.	H. acuta (Pursh 1814) Brit.
Anemone patens var. Nuttalliana (DC. 1818) A. Gray.	Pulsatilla hirsutissima (Pursh 1819) Brit.
Calycanthus floridus L.	Butneria florida (L.) Kearney.
Sassafras officinale Nees. (1831)	Sassafras Sassafras (L. 1753) Karst.
Lindera Benzoin Meisner.	Benzoin Benzoin (L.) Coulter.
Dicentra Canadensis Walt.	Bicuculla Canadensis (Goldie) Milsp.
Corydalis glauca Pursh. (1814)	Capnoides sempervirens (L. 1753) Borck.
Nasturtium officinale R. Br. (1812)	Roripa Nasturtium (L. 1753) Rush.
Cochlearia Armoracia L.	Roripa Armoracia (L.) A. S. Hitchc.
Capsella Bursa-pastoris Moench.	Bursa Bursa-pastoris (L.) Brit.
Gillenia trifoliata Moench.	Porteranthus trifoliatus (L.) Brit.
G. stipulacea Nutt. (1818)	P. stipulatus (Muhl. 1809) Brit.
Spiræa Ulmaria L.	Ulmaria Ulmaria (L.) Barnh.
Agrimonia Eupatoria var. hirsuta Muhl.	Agrimonia hirsuta (Muhl.) Bicknell.
A. pæviflora DC. (1821)	A. striata Michx. (1803).
Poterium Sanguisorba L.	Sanguisorba Sanguisorba (L.) Brit.
Pyrus Malus L.	Malus Malus (L.) Brit.
Gleditschia monosperma Walt. (1788)	Gleditsia aqatica Marsh. (1785)
Gymnocladus Canadensis Lam. (1783)	Gymnocladus dioica (L. 1753) Koch.
Stylosanthes elatior Swz. (1789)	Stylosanthes biflora (L. 1753) B. S. P.
Euphorbia hypericifolia A. Gray. (1848)	Euphorbia nutans Lag. (1816)
Rhus typhina L. (1760)	Rhus hirta (L. 1753) Sudw.
R. venenata DC. (1825)	R. vernix L. (1753)
R. Toxicodendron Auct. (Not. of L.)	R. radicans L.
Enonymus Americanus var. obovatus T. & Gr.	Enonymus obovatus Nutt.
Ampelopsis quinquefolia Michx.	Parthenocissus quinquefolia (L.) Planch.
Archangelica atropurpurea Hoffm.	Angelica atropurpurea L.
A. hirsuta [Muhl. 1818] T. & Gr.	A. viliosa (Walt. 1788) B. S. P.
Fraxinus sambucifolia Lam. (1786)	Fraxinus nigra Marsh. (1785)
Fœniculum vulgare Gaertn. (1788)	Foeniculum Foeniculum (L. 1753) Karst.

Current Names.	Corrected Names.
Osmorrhiza brevistylis DC. 1830.	Washingtonia Claytoni (Michx. 1803) Brit.
O. longistylis DC.	W. longistylis (Torr.) Brit.
Cornus sericea L. (1771)	Cornus Amonum Mill. (1768)
Ledum latifolium Ait. (1789)	Ledum Groenlandicum Oeder (1771)
Gentiana quinqueflora Lam. (1786)	Gentiana quinquefolia L. (1753)
Salvia Betonica Benth.	Betonia officinalis L.
Pycnanthemum montanum Michx.	Koellia montana (Michx.) Kunze.
Mentha viridis L. (1763)	Mentha spicata L. (1753)
M. sylvestris L. (1763)	M. longifolia (L. 1753) Huds.
Erigeron Canadense L.	Leptilon Canadense (L.) Brit.
Scrophularia nodosa var. Marylandica A. Gray.	Scrophularia Marylandica L.
Veronica Virginica L.	Leptandra Virginica (L.) Nutt.
Epiphegus Virginiana Bart.	Leptamnium Virginianum (L.) Raf.
Taraxacum Dens-leonis Desf. (1800) or T: officinale Weber (1780)	Taraxacum Taraxacum (L. 1753)
Lactuca elongata Muhl. (1804)	Lactuca Canadensis L. (1753)
Liatris odoratissima Willd.	Trilisa odoratissima (Walt.) Cass.
Solanum Lycopersicum L. (1753) or Lycopersicum esculentum Mill. (1768)	Lycopersicum Lycopersicum (L.) Karst.
Antennaria margaritacea Hook.	Anaphalis margaritacea (L.) Benth. & Hook.
Gnaphalium polycephalum Michx. 1803.	Gnaphalium obtusifolium L. 1753.
Maruta Cotula DC.	Anthemis Cotula L.
Leucanthemum vulgare Lam. 1778.	Chrysanthemum Leucanthemum L. 1753.
Senecio gracilis Pursh.	Senecio aureus gracilis (Pursh) Brit.
Lappa major Gaertn. 1802.	Arctium Lappa L. 1753.
Lappa minor DC. or Arctium Lappa var. minor A. Gray.	Arctium minus Schk.
Silybum Marianum Gaertn. or Carduus Marianus L.	Mariana Mariana (L.) Hill.

[Read at the Balt. meeting of the A. Ph. A.] *A. B. Lyons.*

Practical Pharmacy.

Valuation of Ergot.—A number of assays of ergot are given, ranging from 0.052, 0.069, 0.120, 0.185, 0.222 to 0.27 percent of cornutin, and thus emphasizing the need of such a valuation; further, while ordinarily large well-developed grains are believed to be most valuable, from just such lots were

the lowest two figures obtained. Referring to suggested method of preserving ergot, C. & L. report that if the fresh drug be thoroughly dried over lime, then transferred to a perfectly dry container and this be well closed, it will keep unchanged for years.

[Gesch.-Ber. Caesar & Loretz, Sept. 1898, p. 67.] *W. A. P.*

Standardization of Digitalis.—Caesar & Loretz, in their Annual Report, say that, while there is still some uncertainty regarding the therapeutic value of certain constituents of digitalis, it is certain that digitoxin is the important constituent and the adoption of a digitoxin standard must be considered a distinct advance, since before this we had no way of differentiating between a potent and an inert leaf. The control of the drug by assay, adopted a year ago, will be retained as it has been found that digitalis preparations, especially the infusion, made from a drug with a normal digitoxin content, were always reliable. It having been claimed that the powdered drug soon becomes inert, experiments were instituted to ascertain the deterioration taking place in the powder on keeping under various conditions; the effect of cultivation on the digitoxin content was also made the subject of an investigation.

The Keller assay method, as given below, yielding exceedingly concordant results and being quite simple, was used in all their work. The method: 28 gm. powdered digitalis leaves, contained in a 400 cc. flask, are macerated with 280 gm. dilute alcohol, with frequent shaking for three hours and then filtered through a filter of about 18 cm. diameter. To 222 gm. of the filtrate are added 25 gm. solution of lead subacetate and the mixture transferred to a 18 cm. filter. 132 gm. of the filtrate are received in an Erlenmeyer flask and precipitate with a solution of 5 gm. crystallized sodium sulphate in 8 gm. of water. The flask is set aside for a few minutes, when the bulk of the precipitate will have subsided, and then inclined in such a way that the liquid almost reaches the mouth of the flask and allowed to remain undisturbed until the supernatant liquid has become perfectly clear. Of the clear liquid 130 gm. are now carefully decanted, transferred to a separator, made alkaline with 2 cc. ammonia water and extracted with 4 to 5 portions of chloroform of 30 cc. each, each portion as drawn off being filtered into an accurately tared Erlenmeyer flask. From the united extract the chloroform is recovered by distillation, the residual chloroform expelled by warming on a waterbath. When cool, the flask is weighed to obtain the amount of crude digitoxin.

The impure digitoxin so obtained is purified by dissolving it in 3 gm. chloroform and adding 7 gm. ether, 50 gm. petroleum-ether and mixing by rotation when the purified digitoxin separates out as a floculent precipitate. The mixture is filtered through a 5–6 cm. filter, no attention being paid to the portion adhering to the flask. As soon as all the liquid has passed

through the filter, the digitoxin upon it is returned to the tared flask by pouring small portions of hot absolute alcohol upon it until all is dissolved and has filtered through. The alcohol is now evaporated by means of a waterbath and the residue dried to constant weight. The weight of the residue represents the amount of digitoxin in 10 gm. of the drug. Plain filters are intended in all of the above operations.

As a result of the investigation the following conclusions are reached: 1. The crop of 1897, the wild plant collected in the Harz and Thuringia district, shows little decrease in strength from August until the end of September, while that collected from the first to middle of October shows a decided decrease in digitoxin content. 2. The crop of 1898 up to the end of July shows a higher digitoxin content than corresponding lots of the previous year, while leaves collected in the earlier days of August, after a period of intense rains, show a considerable diminution. 3. A considerable variation is noted between different lots and it also becomes apparent that the ratio between "crude" and "pure" digitoxin is not constant. 4. Cultivation decreases the digitoxin value of the plant; the leaves collected during flowering time are richer than those collected after bloom; if leaves are collected at the same time and place, one lot from plants that are in bloom, the other from plants which bear no flowers, the later will be found the richer. 5. Exposure of powdered drug to air and light, especially direct sunlight, rapidly causes it to deteriorate, while a powder, kept in well closed, opaque bottles, showed after keeping one month no change whatever. It is interesting to note that exposure to light causes a decrease in pure digitoxin, while the amount of crude digitoxin is not altered, while when exposed to both light and air an equal decrease of crude and pure digitoxin is noted.

The article closes with a contradiction of a statement of H. A. Hau (Apoth. Ztg. 1897, p. 840) who says that digitoxin is insoluble in alcohol. They claim that it is soluble in alcohol and insoluble in water and that its presence in an infusion is due to the solvent action of extractive matter and other glucosides of digitalis upon digitoxin.

[Gesch.-Ber. Caesar & Loretz, Sept. 1898, p. 21.] *W. A. P.*

Valuation of Male Fern.—The pamphlet quoted in the preceding abstract gives the following assays of male fern:

No.	Impure filicin.	Filicic acid.	No.	Impure filicin.	Filicic acid.
1.	30.00 p. c.	7.90 p. c.	9.	10.19 p. c.	0.54 p. c.
2.	29.72 "	6.93 "	10.	17.64 "	traces
3.	27.49 "	6.61 "	11.	17.16 "	0.81 p. c.
4.	27.20 "	9.60 "	12.	16.80 "	5.85 "
5.	24.99 "	5.15 "	13.	16.56 "	traces
6.	24.25 "	5.59 "	14.	16.37 "	0.23 p. c.
7.	23.72 "	7.44 "	15.	15.40 "	0.00 "
8.	23.25 "	5.73 "	16.	13.83 "	0.18 "

The worthless rhizomes were collected in spring or early summer; the better kinds in August, September and October.

[Gesch.-Ber. Caesar & Loretz, Sept. 1898, p. 59.] *W. A. P.*

Kola Nuts and Kola Preparations.—For the preservation of moist kola nuts Bernegau suggests that they be canned in syrup to which a little citric acid has been added. In order to dry them at low temperatures, he recommends the use of dried peet which acts as dehydrating agent. The fresh nuts can also be shipped readily in peet. For purposes of comminution the sliced nuts are to be dried for 24 hours at a temperature not exceeding 80°. To the powder, which is to be used in the manufacture of kola biscuits and other similar aliments, sodium phosphate is to be added as "Aufschlussmittel" (solvent). [Pharm. Ztg., 43, p. 683.] *E. K.*

Preparation of Fluid Extract of Kola.—For the extraction Bernegau recommends that 1 ko. of drug be moistened with a solution of 25 g. of sodium phosphate in 150 g. glycerin and 200 g. of dilute alcohol, and the mixture set aside for 12 hours. The mixture is then percolated with 10 ko. of dilute alcohol. The percolate is reduced to 1 ko. The best result, i. e. largest alkaloidal content, aroma and stability was obtained with fresh nuts that had been dried at 80° and comminuted. The extract contains glucosidal as well as free caffeine. [Pharm. Ztg., 43, p. 683.] *E. K.*

The Assay of Kola Nuts and Extract.—In order to get around the use of calcium oxide which may possibly be objectionable, Schumm employs the following method. The dried and powdered nuts are moistened with 80% *Spiritus Dzondii** and the mixture set aside in a closed vessel for several hours. It is then transferred to a paper capsule and extracted with chloroform for ¾ hr. The chloroform is recovered by distillation and the residue purified according to Dieterich's method.

For the assay of the extract he proceeds the following manner: To 20 g. extract in a 50 ccm. flask 4 g. of a 10 p. c. soda solution are added and the solution set aside for 5 minutes with occasional shaking. The solution is then transferred to a 100 ccm. separating funnel and the flask rinsed with 20 ccm. chloroform. The same chloroform is then used to shake out the alkaloid from the alkaline solution. Two further portions of chloroform of 20 ccm. each are used. The united chloroformic solutions are shaken with 2 ccm. of water and the washed chloroformic solution is evaporated almost to dryness. The residue is dissolved in 20 ccm. of N/1 hydrochloric acid with the aid of gentle heat. The acid solution is rendered strongly ammoniacal in a separating funnel and shaken out three times with 20 ccm. of chloroform. The residue from the chloroform is weighed.

[Pharm. Ztg., 43, p. 684.] *E. K.*

* A 10 p. c. alc. sol. of ammonia.

Literary.

Books and Pamphlets Received.

Wilh. Engelmann — Leipzig. Die natürlichen Pflanzenfamilien. Von A. Engler und K. Prantl. Lieferungen 173 bis 177. 1898.

D. C. Heath & Co.—Boston. A short history of chemistry by Prof. F. P. Venable. One vol., pp. VIII, 163. 1896. $1.00.

Henry Holt & Co.—New York. Plant life considered with special reference to form and function by Professor Charles R. Barnes. One vol., pp. x, 428. 1898.

Lea Brothers & Co.—Philadelphia. Manual of chemistry. A guide to lectures and laboratory work for beginners in chemistry. A text-book specially adapted for students of medicine, pharmacy and dentistry. By Professor W. Simon. Sixth edition, thoroughly revised. One vol., pp. XVI, 536, with forty-six illustrations and eight colored plates. 1898. $3.00.

J. B. Lippincott Company—Philadelphia, Pa. A text-book of chemistry intended for the use of pharmaceutical and medical students by Samuel P. Sadtler and Henry Trimble. Second revised and enlarged edition. In two volumes. Vol. II.—Analytical chemistry and pharmaceutical assaying, pp. 336. 1898.

Ohio Valley Company—Cincinnati. King's American Dispensatory by Dr. Harvey W. Felter and Dr. John U. Lloyd. Eighteenth edition, third revision, entirely rewritten and enlarged. In two volumes, Vol. one, pp. x, 904, XXVII. 1898. Cloth, $4.50; sheep, $5.00.

W. B. Saunders—Philadelphia. A text-book of materia medica, therapeutics and pharmacology by Dr. George F. Buttler, Professor in the Medical Department of the University of Illinois. Second edition, revised. One vol., pp. 860. 1898. Cloth, $4.00; sheep or half morocco, $5.00.

—— Essentials of materia medica, therapeutics and prescription writing arranged in the form of questions and answers, prepared especially for students of medicine by Dr. Henry Morris. Fifth edition, revised and enlarged. One vol., pp. 288. 1898. $1.00.

Verlag von Julius Springer—Berlin. Volksthümliche Arzneimittelnamen. Eine Sammlung der im Volksmunde gebräuchlichen Benennungen der Apothekerwaaren. Von Dr. J. Holfert. Zweite, sehr vermehrte Auflage. Ein Bd., pp. vi, 226. 1896. M. 3.00.

Verlag von Friedrich Vieweg und Sohn—Braunschweig. Graham-Otto's ausführliches Lehrbuch der Chemie. Erster Band, dritte Abtheilung: Beziehung zwischen physikalischen Eigenschaften und chemischer Zusammensetzung der Körper. Unter Mitwirkung von Fachgenossen herausgegeben von Dr. H. Landolt, Professor an der Universität Berlin. Schluss des ersten Bandes, pp. 504 to 890 und xiv. 1898.

George Wahr—Ann Arbor. Laboratory work in physiological chemistry. By Dr. Frederick G. Novy. Second edition, revised and enlarged. One vol., pp. 326, with frontispiece and twenty-four illustrations. 1898. $2.00.

Author—New York. Modern synthetic medicinal products. By Dr. V. Coblentz. Pamphlet, pp. 51. Reprinted from the Journ. of the Soc. of Chem., Ind.

Koloniaal Museum—Haarlem, Holland. Bulletin No. 19. De anatomische Bouw der Oost-Indische Jjzerhoutsoorten en van het Djatihout benevens een Overzicht van alle thans bekende Jjzerhoutplanten, door P. A. Blitz, mil. apoth. 2e Kl.

Reviews.

A Short History of Chemistry. By Dr. F. P. Venable, Professor of Chemistry in the University of North Carolina. One vol., pp. viii, 163. D. C. Heath & Co., Boston. 1896. $1.00.

This book has been written because of a conviction of the author based upon his own experience and the experience with his students "that one of the best aids to an intelligent comprehension of the science of chemistry is the study of the long struggle, the failures, and the triumphs of the men who have made this science for us." In this the author, no doubt, will be seconded by all teachers of chemistry who have ever seriously attempted to grasp the evolution of their science. Yet not many years ago the study of the history of chemistry found no place in the chemical curriculum, but was con-

sidered rather a passtime for the advanced chemist who had sufficient leisure to study the work of men from whom we supposed we could learn nothing. The study of the history of chemistry was considered a passtime rather than a necessity. Fortunately this is rapidly changing. The classical, four-volume work of Kopp with its supplementary volumes could not be used as a guide for beginners in a study that had to be carefully fostered. The excellent history by Ernst von Meyer, no doubt, served its purpose admirably with the German university student, but the English translation evidently found little favor with the American college student. Here it seems to have served the purpose of a teacher's rather than a student's guide. For almost a quarter of a century France has had a guide for beginners in Hoefer: La chimie enseignée par la biographie de ses fondateurs. Hoefer's little volume is so entertainingly written that it reads more like a "story" of chemistry than like a seriously written history. Yet it, no doubt, has stimulated many a French student to attack the more scholarly and elaborate works of Berthelot. We may hope that Venable's short history will do the same for the American student. Not that we want to compare it with Hoefer's book just quoted, for it is of an entirely different type. Nevertheless it is short enough for a beginner in chemistry not only to read it once and lay it aside, but to study. Besides it is cheap enough so that most teachers will not hesitate to recommend it to their students on that score.

Inasmuch as there is nothing strikingly original in the arrangement and content of the book, it seems unnecessary to analyse it. It is based, as the author states in the preface, on the principal authorities, such as Kopp, Berthelot, etc. If this short history serves as a guide to beginners and as a stimulus for more detailed study, it will certainly have fulfilled its mission. *E. K.*

PLANT LIFE, considered with special reference of form and function by Charles Ried Barnes, Professor of Plant Physiology in the University of Chicago. Henry Holt & Co., New York. 1898. pp. 428, illustrations 415.

In few lines of instruction perhaps has so radical a change of method come about as has been witnessed during the last few years in botany. The first great popularizer of botany in America was Asa Gray and his elementary text-books were for decades the standard

works in this sphere of plant study. Some morphological features were considered, still fewer of a physiological nature, and, most conspicuous to the learner both as he approached the study and as it lay in his memory after completing it, a terminology extensive enough to enable him to classify in the Manual fifty, more or less, flowering plants of his neighborhood. For many this course was the path leading to pleasant fields and a more intimate study of the relationships of the higher plants resulted. To many, the word botany came to be permanently associated with a barren list of unmeaning names. The systematic stamp placed by Gray on elementary botanical instruction proved remarkably enduring, and it was not until American botany came to look to Europe for its direction that other than the taxonomic side of the science began to flourish.

As the study of plant physiology and the life history of the lower forms of plant life came to be increasingly emphasized in the centers of botanical work, largely through the influence of European investigators, this tendency to neglect all else than systematics began to relax and a more systematic development of botany began to appear. The natural consequence of this course was the increased emphasis of the study of the living plants themselves in the laboratory and of the lower forms as well as the higher. Toward this end, elementary instruction in botany is now striving. The laboratory is now generally recognized as an integral part of the high school equipment and the analysis and herbarizing of a list of phanerogams is no longer the essential feature.

In view of the transition state of elementary botanical instruction in this country at the present time, a text-book based squarely on the advanced ideas of education and thoroughly abreast with the times, is a cause for great congratulation to all who are in any way concerned with botanical teaching. Such a book is that before the writer. As a clear, concise, accurate statement of the best modern views of plant life, the book under discussion is a model. It is without doubt in advance of the large body of pupils now studying botany in the high school grades, and many teachers in botany will find it necessary to put some solid work on the subject before they are in a position to use this work to the best advantage.

The subject matter falls into four parts: 1, the vegetative body; 2, physiology; 3, reproduction, and 4, ecology. The first seven chapters are devoted to a discussion of the chief morphological

features of plant types beginning with the single cell and progressing toward the seed plants. Chapters seven to ten deal with the organography, development and anatomy of the higher types of plants. The part dealing with physiology presents in the clearest manner the gist of the modern views on this subject. Reproduction is discussed from the standpoint of the most approved ideas and a consistent and helpful terminology is used. The part dealing with plants in relation to their environment is as satisfactory as the preceeding parts. Altogether, the writer knows no book which presents so well the subject matter of elementary botany for this grade of work as that here under discussion.

Directions for laboratory work in keeping with the subject matter here presented are included as an appendix, making the work thus a laboratory guide for those who wish to thus use it.

Another feature of the work deserving of high praise is the large number and excellent quality of the illustrations. Some were especially prepared for this work, the remainder were chosen with great care from many sources. The book is very clear as regards typographical errors and the printers have succeeded in making an unusually attractive book both as regards the make-up of the page and the choice of binding.

The book would serve as an excellent reference work in the library of the pharmacist to whom botany is one of the essentials.

Rodney H. True.

VOLKSTHÜMLICHE ARZNEIMITTELNAMEN. Eine Sammlung der im Volksmunde gebräuchlichen Benennungen der Apothekerwaaren. Nebst einem Anhang: Pfarrer Kneipp's Heilmittel. Unter Berücksichtigung sämmtlicher Sprachgebiete Deutschlands zusammengestellt von Dr. J. Holfert. Zweite, sehr vermehrte Auflage. Ein Bd., pp. VI, 226. Verlag von Julius Springer. 1898. M. 3.00.

The first edition of this collection of names grew out of a list of synonyms contained in the yearbook of the Pharmaceutischer Kalender for 1886. With the aid of almost forty colaborers in various parts of the German empire the original list was almost doubled. This list is not to serve for the exact botanical identification of obsolete vegetable drugs or assist in any way the etymological or historical derivation of common popular names. If it were a scientific

treatise of such a nature, it would cease to have practical value. The pharmaceutical practitioner wants to know what the people expect to get, e. g. if they call for Aalfett or Aalquappenpflaster. He knows that Aalfett is not to be had in the drug market, neither does it concern him what might be the nearest therapeutic substitute for the genuine article. What he wants to know is that the people have been getting codliver oil and that they expect to get the same article which their parents and grand-parents have known by that name. The book is a product of experience and is written for the practitioner.

The first edition of 7,000 names, which appeared in 1892, has now grown to one of 13,000. This increase has been made possible by requesting the cooperation of as many as one thousand apothecaries in Germany, Luxemburg and Switzerland. The material thus obtained has been carefully sifted and this new edition is the product of this elaborate undertaking. The book naturally takes cognizance of the fact that in different provinces the same popular name stands for different medicaments or medicines. Thus e. g. when *Abführmittel* is called for, the people in one district expect to get *Pulv. laxans;* in another *Pulv. Liquir. comp.;* in a third *Tub. Jalap. pulv.* Inasmuch as it is well nigh impossible to outline geographically the exact meaning conveyed by a particular popular name, it remains for the apothecary to ascertain by means of a question or two just what is wanted. The book, no doubt, is the most complete of its kind and will be serviceable wherever Germans are to be found. *E. K.*

Flora des Norddeutschen Flachlandes (ausser Ostpreussen). Von Dr. Paul Ascherson und Dr. Paul Graebner. pp. 640. Verlag von Gebrüder Borntraeger, Berlin. 1898.

For many years it has been a common practice in the countries of middle continental Europe to publish small compact pocket manuals or "floras" of limited regions for the use of travellers. This practice has without doubt tended materially to popularize the study of the plants of such regions. The work here under consideration is intended to serve the purpose of a pocket manual and at the same time it has been made full enough to serve the general purposes of the office manual. The work is an exceptionally good one of its kind. In it the authors have followed the lead of Engler and Prantl in the arrangement of natural orders and genera. The descriptions are good, notwithstanding many abbreviations of the commoner words

which may be somewhat annoying to a beginner. One innovation, the advisability of which remains to be demonstrated, is the omission of nearly all author citations. Considering the size of the work, it is abundantly supplied with critical notes on distribution, habitat and occurrence. Official plants are indicated as such with a short statement of the part of the plant used, its active principle and usually what it is used for. Foot notes give the meaning of nearly all generic and specific names and usually state by whom the name was first used as a plant name.

The work is appearing in parts, of which there are to be four; the first came out in July, two others have followed in rapid succession and the fourth and last part will appear during the autumn. The printers have done their work well. The type is small but clear. All things considered, it is a very satisfactory work and one which ought to be a very h lpful companion to the student who works in the region for which the book was made. The names of the authors are abundant surety for its accuracy. *L. S. Cheney.*

A Text-book of Chemistry, intended for the use of pharmaceutical and medical students, by Prof. Samuel P. Sadtler and Prof. Henry Trimble. Second revised and enlarged edition. In two volumes. Vol. I.—General Chemistry. J. B. Lippincott Company, Philadelphia. 1898.

To find the title of "Pharmaceutical and medical chemistry" on the back of the volume explained on the titlepage as meaning "A textbook of chemistry intended for the use of pharmaceutical and medical students", constitutes a favorable omen. The authors evidently intend to present a discourse on chemistry, not on pharmacy with the mere aid of chemical terms. We are glad to be able to state that the volume is true to the principle thus laid down on the title page.

The first edition of this work appeared in 1895 in one volume of 950 pages. The second edition is to be complete in two volumes, the first of which has just made its appearance. Volume one of 842 pages contains what is termed the "general" portion of the first edition in distinction to the analytical part which, revised and greatly enlarged, is to constitute volume two of this edition. It seems that each volume is to be a unit in itself since the first volume is provided with an index as well as a table of contents. Not only is the size of the present volume an advantage over that of the first

edition, but inasmuch as it is to be used for study and reference it need not be exposed to the destructive tendencies of laboratory use for which the second volume is primarily intended.

Outside of this change in the make-up of the second edition, volume one presents no striking contrast with the corresponding part of the first edition. It has principally been revised, i. e. corrected in a general way so as to bring its contents in better conformity with our knowledge of to-day. Since, no doubt, the book was primarily written as a guide for the immediate students of the authors, it contains the introduction on physics customary at the Philadelphia College of Pharmacy and other institutions of that type. This introduction occupies about ninety pages. The bulk of the volume is devoted to inorganic chemistry, organic chemistry receiving only 276 pages. Yet one cannot complain that as a text-book the organic portion should have been greatly enlarged. As a work of reference, however, an expansion of this part seems highly desirable. From an educational point of view the classification of the elements into metals and non-metals, and of the organic compounds into fatty and aromatic is to be regretted; but, so long as a large percentage of chemical authors still insist on this classification which has outlived its usefulness, it would not be just to criticize it harshly. The specialist will, no doubt, find statements that are not quite up to date, but so long as he does not make his special knowledge readily available to others, he also should not be over critical. The first edition has been greeted not only by students, but particularly by teachers of pharmaceutical chemistry as filling a long felt want about as well as could be expected. May the second edition prove even more serviceable than the first. *E. K.*

King's American Dispensatory. By Dr. Harvey Felter and Dr. John U. Lloyd, Adjunct Professor, and Professor respectively of Chemistry, Pharmacy and Toxicology in the Eclectic Medical Institute, Cincinnati, Ohio. Eighteenth edition, third revision, entirely rewritten and enlarged. In two volumes. Vol. I: A to F, pp. X, 904, xxxvii. Published by the Ohio Valley Company, Cincinnati. 1898. Cloth $4.50 per volume; sheep $5.00.

In an article entitled Aphorismen zur Pharmacopöe-Revision, Dr. Hoffmann* in 1890 described in his masterly way the

* This journal, vol. 8, p. 7.

growth of the United States Pharmacopœia. In tracing the development of the national pharmacopœial idea, he showed how the United States Dispensatory written by Drs. Wood and Bache succeeded much better in making American physicians and pharmacists independent of England, than the two rival pharmacopœias of 1830 and 1831. In fact these two pharmacopœias as well as their successors were almost entirely displaced by the U. S. Dispensatory which passed through fourteen editions during the same time in which the U. S. P. passed through six. How this supremacy was at least checked by a radical change in the revision of the pharmacopœia itself on the one hand, and by the appearance of a rival dispensatory on the other hand, viz. the National Dispensatory by Stillé and Maisch, is brought out in the article referred to above.* That the early authors of the U. S. Disp. used not only their scientific knowledge and their affiliation with the pharmacopœial revision committee to maintain the authority and supremacy of their work, has been shown by Professor J. U. Lloyd in an article entitled Pharmacopœias and dispensatories.

The differences existing between the so-called regular physicians and the reformers or eclectics no doubt prevented the work of Dr. King from coming into direct competition with the older U. S. Dispensatory. That it was considered dangerous, however, as a competitor in a general way is evidenced by the injunction taken out against Dr. King's work by the proprietors of the United States Dispensatory. The injunction was upheld by the courts and, in consequence, Dr. King was compelled to destroy his plates and pay the owners of the U. S. Dispensatory a large amount of money. In all, the expense to Dr. King was over $6000.

This is not the place to discuss the question as to whether the editors were not as much or more indebted to the British dispensatories than Dr. King was to their work. Suffice it to state here that the first edition which appeared in 1852 as The eclectic dispensatory by Dr. John King and Dr. Robert S. Newton appeared after the destruction of the plates in the form of a rewritten second edition in 1854 under the name of The American eclectic dispensatory with King as sole author. The title was subsequently changed to The American Dispensatory, by which it is still

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* See also l. c. 12, p. 53.

known. That the work possessed the elements of a business rival at least is shown by the fact that since its first appearance in 1852 it has passed through not less than seventeen editions. This popularity cannot be wholly ascribed to the esteem in which Dr. King was held by his confrères of the eclectic school.* In 1880 a supplement of 202 pages was added by Dr. King and Professor Lloyd.

As a personal and devoted friend Professor Lloyd has undertaken with his associate the revision of the American dispensatory. The revision fortunately consisted in entirely rewriting the work. This has permitted a more uniform style of presentation and the elimination of much material that would have been only cumbersome. In undertaking this task, Prof. Lloyd has once more demonstrated his unselfish friendship and devotion. We hope that the sacrifice on his part will in addition to his mere association with the revision secure for the work a wide distribution and thus bring to Dr. King's family the returns for labor which he himself was compelled to yield.

E. K.

ANATOMISCHER ATLAS DER PHARMAKOGNOSIE und Nahrungsmittelkunde von Dr. A. Tschirch und Dr. O. Oesterle. Lieferung 14. Chr. Herm. Tauchnitz, Leipzig. 1898. M. 1.50.

The current number of this valuable work deals with the following subjects: Lavender flowers (*Lavandula officinalis* Choix), rhubarb (*Rheum palmatum* L., *R. palmatum* var. *tanguticum* Maxim., and other species of the genus) and the leaves, flowers, unripe fruit and peel of *Citrus vulgaris* Risso.

In this installment, the rather puzzling anatomy of the rhubarb is worked out. Only after a study of younger roots was the peculiar structure, well known in its general features to students of drugs, rendered plain. The difficulty is due to the presence in the rhizome of two different fibro-vascular systems. The origin and cause of this complicated double system is worked out very fully. This account must prove of great interest to the student of plant anatomy as well as to the pharmacognosist.

Other points might be mentioned in which the value of this publication as repository of the results of original research is exemplified. The plates are up to the usual standard.

Rodney H. True.

* See Prof. Lloyd's biographic sketch of Prof. King in the Western Druggist for December 1893.

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Editorial.

The various annual gatherings of national scientific and professional organizations are over and their members, with the exception of the secretaries and possibly a few other officers, have once more settled down to the routine of daily life. If one were to judge these meetings by the immediate results accomplished, one might indeed be discouraged to see so much time, energy and money spent in the realization of comparatively so little. Fortunately it is not always the immediate positive result that is the most far reaching. A friendship formed, an inspiration gained may not only more than pay, in the best sense of the term, for all discomfort of travel during a hot season, but also prove the germ of an important investigation or of a new movement leading to an advanced and improved position. It is from this broader standpoint that we should judge association gatherings rather than from that of immediate results, though we may not hesitate to criticise temporary as well as chronic shortcomings in association life.

Viewed from this broader basis, is there any tangible measure which will enable us materially to improve the work of our national organization? With the growth of the American Association for the Advancement of Science, there has made itself felt more and more on the part of not a few members the desirability of attending both associations. This feeling will grow even more in the future than in the past, especially since the schools of pharmacy are demonstrating the intimate relationship between the pharmaceutical and the general sciences. In fact, the difference exists principally in name. Not only

are the younger generation of pharmaceutical scientists greatly interested in the work of the A³S to such an extent that they will frequently attend the meetings of this association rather than those of the A. Ph. A., but even some of the older members, past presidents of our national association, were found at Boston this past summer and not at Baltimore.

This is not as it should be and yet who will blame those with limited purse or time or both for attending the meeting of that association which will bring them in personal contact with the larger number of immediate laborers in the field in which they are especially interested. The chemical as well as the botanical sections at Boston each had a larger number of papers than the three sections at Baltimore taken together. It need not follow that the papers at Boston were of a much higher order than those read at Baltimore; certainly those read at Baltimore received a fair discussion whereas those in the chemical section at least were rushed through for lack of time and sometimes of a proper spirit. Nevertheless, such shortcomings can readily be remedied and the possibility of meeting many of the most important American representatives of science is certainly a great temptation.

But how can we prevent our members from attending the meetings of the A. A. A. S.? Indeed, we do not want to prevent anything of the kind, but we should like to see our members given an opportunity to attend both meetings. A veritable host of special societies has affiliated itself with the American Association. These meet either just before or just after, in fact, some of them hold joint sessions with the related sections of the general association. To enumerate these societies ranging all the way from mathematics to the teaching of engineering is not at all necessary; neither is it important to dwell on the various degrees of affiliation.

The idea of having a section on pharmacy and pharmacognosy like that of the German association is by no means a new one. How the American Association for the Advancement of Science would receive at the present time the proposition looking toward the establishment of such a section it is difficult to foretell. Indeed the establishment of such a section would very likely cause a divorce of the scientific and the professional and commercial element in pharmacy, a separation that would very likely be productive of more harm

than good. There is much truth in Ex-President Whitney's statement that the two must go hand in hand supporting one the other.

Furthermore, a body such as the American Pharmaceutical Association must be conservative in its actions if it will not be swayed to and fro by fad or fancy. To what extent, if at all, would our association care to identify itself with the A^{3}S? Might not the proposed affiliation increase the breach, apparent or real between the pharmaceutical practitioner and the "ultrascientific" professor? These and other queries should be carefully considered before a decided change in the policy of the association is made.

Yet, with due consideration for caution and even expediency, something practical can be done immediately. The Am. Pharm. Ass'n. meets early in September next year at Put-in-Bay, the A. A. A. S. during the latter part of August in Columbus. The council of the former association has been authorized to change the date of meeting by a week. There certainly can be no very valid objections to adjusting the date of our next meeting so that those persons who desire to attend the meetings of both associations may do so without great additional expense. The council should give this matter its most careful consideration. The future welfare of the Am. Pharm. Ass'n. may in no small measure depend upon an adjustment of our date and place of meeting so as to enable persons to attend both meetings.

This is not a mere fancy of the writer. During the past summer he has approached a number of members of the A. Ph. A. on the subject and all were favorably impressed by the suggestion. By a happy coincidence the two associations meet in the same state next year and a slight change in date may greatly accommodate a number of our members. It will be time in 1899 to consider whether we desire to adjust our place and time of meeting according to place and time of meeting of the A^{3}S. Even if we conclude to affiliate ourselves with the A^{3}S to that extent, nothing need prevent us from going our own way if we have special reasons for so doing. For its fiftieth anniversary meeting the A^{3}S naturally came to Boston, its birth place. For the same reason the Am. Pharm. Ass'n. will want to celebrate its semicentennial in Philadelphia no matter where the A^{3}S meets and whatever its attractions. As a general rule, however, a loose affiliation with the A^{3}S will react favorably on our own organization and on pharmacy in general. *E. K.*

Laurus Sassafras.*

By *John Uri Lloyd.*†

This tree at one time created greater interest in the old world than any other American product, not excepting tobacco. Its early history is marvelous. Before any other American product had made an impression on European medicine, ships were dispatched to the new land for the sole purpose of collecting sassafras. Even as late as 1622 it is shown that in Virginia the colonists were equally concerned in exporting tobacco and sassafras. The history of sassafras is the history of a New Remedy asserted to possess wonderful qualities. Its way to Europe was marked by the blood of French and Spanish explorers. Linked with the birth of sassafras are to be found the names of the men who struggled for mastery in Florida. From the landing of Ponce de Leon in 1512 to the expedition of De Soto in 1538, through the struggles of the French Huguenots under Jean Ribault and René Laudonnière, until finally the sad ending of that French colony was accomplished by the cruel Spanish general Pedro Melendez; the drama closing in the revenge on the Spanish by the French nobleman, Dominic de Gourgues, sassafras served its part as a remedy sought alike by all. It was one of the objects of conquest in this land of the sassafras tree. The history of medicines shows that with the discovery of every new land came reports concerning marvelous new remedies found in those lands, and history teaches that these valued products often marked their way in privation, blood and toil, in conquest and in shame. Such is the record of sassafras, and perhaps the fragrant tree is conspicuous over other drugs for its part in events that concerned men and nations when conquest was the law of nations and massacre was common in the name of justice.

History of Sassafras.—Sassafras is indigenous to the Western Hemisphere, occurring in Florida, Virginia and as far north as Canada. It is found west as far as Kansas, but is there very scarce.[1] Its occurrence in Brazil is recorded by Piso[2] (1658). Sassafras was in

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* This paper on the history of sassafras is one of the papers enumerated as having been read at the first quarterly meeting of the New York College of Pharmacy. See p. 81 of last month's Supplement.

† The thanks of the author are hereby extended to Mr. C. G. Lloyd and to Dr. Sigmond Waldbott, Librarian of the Lloyd Library, for valuable assistance.

medicinal use among the natives of Florida long before Ponce de Leon in 1512 set foot on the soil of this peninsula. It is generally stated and believed that the Spaniards in 1538 were the first Europeans to obtain knowledge of this drug, which is the date of De Soto's invasion of Florida; yet we can find no record of such a discovery in at least two narratives of this expedition that are accessible to us.[3] On the other hand, there seems to be sufficient evidence of the fact that the Spaniards gained the knowledge of sassafras and its medicinal virtues through the French Huguenot emigrants who under their unfortunate leaders, Jean Ribault and René Laudonnière, occupied Florida between the years 1562 and 1564.

To the Spanish physician, Nicolaus Monardes of Sevilla, in 1574, is to be credited the first detailed description of sassafras and its healing virtues, his information being gained, however, not from any actual experience in the sassafras lands, but from personal consultation with travelers, and the government records at his command.[4] From Clusius' version of Monardes (1593)[5] it is learned that the drug was imported from Florida into Spain some years previous to 1574; that the Spaniards in Florida, when overtaken by fevers and other diseases consequent to miasma and unwholesome drinking water, were advised by the few remaining Frenchmen to use this drug which was called by the French Sassafras (for reasons unknown to Monardes) and Pavame by the Indians from whom the French obtained their information. Monardes (in Clusius' version) adds that sassafras grows in Florida in maritime places, such as are neither too dry nor too moist, being especially plentiful near the harbors of St. Helena and St. Matthew, where they form whole woods, which exhale such a fragrance that the Spaniards who first landed there believed the tree to be the same as the cinnamon tree of Ceylon. Clusius recognized the fact that the root ranks first in value, the branches next and the trunk last; but that the bark is to be preferred.

For this reason, he adds, the root is given medicinally in the smallest quantity, the branches in larger amount, and the wood of the trunk is equal in value to half the weight of the root. Nor should it be cut for a longer period than one year, nor be deprived of its bark, or else it becomes useless.

The illustration given by Monardes of the sassafras tree has been widely copied in the herbals of the 16th and 17th centuries, among which we may name: Dalechamps (1586),[6] Joh. Bauhinus (1650),[7]

and Piso (1658),[2] the latter giving it the Brazilian synonym Anhuiba.

Francisco Hernandez, another Spanish physician, who travelled through Mexico between the years 1571 and 1577,[4] speaks of the occurrence of sassafras at Mechuacan in Mexico. His work was translated by Francisco Ximenez, a monk of the Convent of San Domingo of Mexico in 1615.

Anhuiba, sive Sassafras.
(See Reference No. 2.)

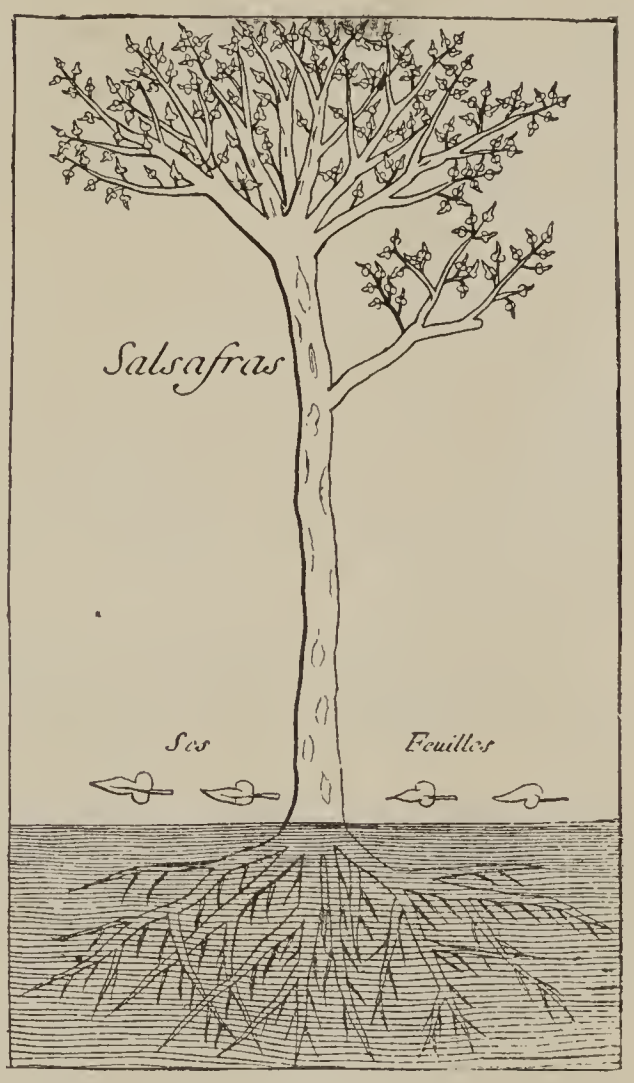
The latter author is quoted at length on the subject of sassafras by Jean de Laet, a noted Dutch geographer (who died 1649), whose work "Novus orbis,[8] etc. 1633," testifies to the probably French origin of the knowledge of sassafras. Having taken the account given by Laudonnière as his source, he speaks in Chapter XIV. concerning the land and inhabitants of the part of Florida traversed by the French, and calls attention to this tree as being prominent in the woods, and refers to the exquisite odor of its wood and bark. He states that this tree is called Pavame by the Indians and Sassafras by the French.

Prof. Flückiger[4] remarks that he was unable to find the passage alluded to in Laudonnière's own report of 1586, and diligent search on our part in a verbatim reprint[9] of this work of 1853 likewise failed to produce the passage. The term "*esquine*"* occurring therein might have been the passage referred to, but it hardly stands for sassafras, because it is stated (p. 6 and p. 76) that it is a twining vine good against pocks (la vérole). On p. 133 a root is mentioned from which the Indians produce flour to make bread, and on page 155 it is stated that the colonists in a period of distress used the wood of this "esquine" to make flour and bread, which precludes sassafras from being the tree referred to. However, it is further

* *Squine*, French for *China root*, which may mean either *Smilax China* or *Galangal root*. (Webster's Dict. and pharmaceutical authorities.)

stated (p. 10) that in councils of war or peace the native king gathers around him the priests and the eldest of the tribe and that they drink from the same vessel a decoction quite hot, called by them *Casiné*, made from the leaves of a certain tree. This might refer to sassafras, for the statement is made that this potion has the effect of causing abundant sweat.

It must in our opinion, with due deference to preceding authorities, be mere conjecture as to whether any of these descriptions answers to sassafras.



(See Reference No. 22.)

De Laet credits Ximenez with the statement that sassafras wood has the property of rendering sea water potable, as experienced by Ximenez on a voyage from Florida to Vera Cruz in 1605.[8]

Soon after the discovery of sassafras, the drug was exported to Europe, as before stated, and became at once known in Spain and France. It was well known in Frankfort-on-the-Main as early as 1582 and in Hamburg in 1587, when it was termed *Lignum pavanum seu floridum, seu Xylomarathri* (fennel-wood).[10] Sailing expeditions to America were undertaken in those times to secure the wood as well as the root. An English merchant, Martin Pring, is recorded by Charles Pickering[11] as having with two small vessels arrived on the American coast in the beginning of June in 1603. The point named is 43° and 44° northern latitude among a multitude of islands. Following the coast south, in search of sassafras, he entered a large sound, and on the north side in the latitude of 41° and "odde" minutes built a hut and enclosed it with a barricade, where some of the party kept guard while others collected sassafras in the woods. The natives were treated with kindness, and the last of the two vessels departed freighted on the 9th of August.

In connection with the introduction of sassafras root into England, Daniel Hanbury[12] unearthed the following interesting record contained in the Calendars of State Papers of the Public Record Office:—

"Instructions for suche thinges as are to be sente from Virginia, 1610.

1), Small Sassafras Rootes to be drawen in the winter and dryed and none to be medled with in the somer and yt is worthe 50 £ and better, p. Tonne." Etc.

But still, the exact botanical origin of sassafras was not known to the writers of the 17th century. While they were well acquainted with the peculiar foliage and the other characteristics of the tree, the flowers and the fruit were expressly stated to be unknown by such writers as Clusius (Monardes) (1593), Joh. Bauhinus (1650) and Piso (1658).

Two early statements concerning the fruit, may, however, now be recorded:—

Caspar Bauhinus, who named the sassafras tree "arbor ex Florida ficulneo folio", in 1623 reports[13] that specimens of the leaves and the fruit of the tree were sent to him by Dr. Doldius of Nuremberg, and he describes the fruit as oblong, rugose and attached to very long pedicels.

Likewise, Jean de Laet in the index to the chapter on sassafras of his aforementioned book, requests the reader to insert in the text that the fruit of this tree was brought to the notice of the author by a person returning from Novo Belgio, and adds that the fruit does not differ much in form from the berries of the laurel, although it is much smaller. It contains a white nut of bitterish taste, divided into two parts.

As far as we can ascertain, Plukenet as late as the year 1691 [14] was the first to give an illustration of the berry, which is faulty, however, because it is devoid of the acorn-like calyx. The tri-lobed leaves are also illustrated, and the botanical name affixed to by Plukenet is "Cornus mas odorata, foliis trifido, margine plano, Sassafras dicta."

Catesby, true to his task as set forth in the title of his book on the natural history of Virginia, etc.,[15] viz. to correct faulty illustration of plants by preceding authors, gives (in 1731) a good picture of sassafras, including the fruit and flowers.

In the middle and latter part of the 18th and the earlier part of the 19th century, sassafras was studied in its native country by such

celebrated travellers as Peter Kalm,[16] J. David Schoepf,[17] F. A. Michaux[18] and Fred. Pursh.[19] Peter Kalm's account especially contains many points of interest which it may be well to partly reproduce in abstract. He states that

Sassafras is called in the Swedish vernacular *Saltenbras* (sometimes Salssenfras), no doubt a corruption of sassafras, in allusion to the property this wood has of exhibiting a peculiar crackling noise when thrown into the fire, which readily suggests the similar property of common table salt.*

The tree grows to a respectable height in Pennsylvania under 40° n. l.,† but becomes dwarfish further north, e. g. at Oswego or Fort Nicholson, i. e. between the 43rd and 44th° where it attains a height of scarcely 4 feet (2 *alnar*) and a thickness not to exceed that of a man's little finger. It springs up in old neglected fields, being among the first trees that make their appearance in such places, which suggests to the author the manner in which birches frequently grow in Sweden. The soil where sassafras thrives is a loose earth of a pale tile color, consisting mostly of sand, dashed with a little clay. Never was he aware that the tree stood on humid or low-lying places. In this connection it may be well to quote the statement of early authors to the effect that the sassafras tree cultivated in Europe is not known to flower, and consequently bears no fruit. The fruit used in the propagation of the tree must therefore be imported from America, and the precaution must be taken to place it in earth prior to shipping it. Sometimes a period of one to three years will elapse before the seeds take root. Kalm states that the tree might be propagated from shoots, but the author observes that they do not take root readily. The best mode of propagation is from the seeds, but the berries are difficult to obtain, because birds greedily devour them before they are even half ripe; also the young shoots are subject to attack by cows. Sassafras root and bark are used for various domestic purposes.

The bark is used by women to dye woolen goods a handsome orange, which is so permanent that it resists the bleaching action of the sun. The boiling of the bark is done in bronze pots, as iron pots would affect the color.

* Wittstein[21] derives Sassafras from *Salsafras*, the Spanish word for Saxifrage, breaking the stone, in allusion to its alleged property of dissolving and removing calculi.

† 40 to 50 feet high, and of larger dimensions even further south, where Pursh[19] has seen trees of 2 feet in thickness.

The fragrant principle is believed to protect sassafras against decay, hence the wood is frequently used as posts or stakes for garden fences. It is also reputed to expel bed bugs, and bedsteads have been made of such wood. Kalm adds that this material is efficient only as long as the wood retains its smell, i. e. about two or three years. In Pennsylvania it has been the custom to place chips of sassafras wood or of the root in wardrobes to keep moths away; Kalm has seen root which lay 5 to 6 years in a table drawer and still retained its strong smell. Kalm finally relates several instances where sassafras was used with much success in curing various diseases. He states that at one time it was the custom in London to drink as a tonic a tea made of the flowers and chips of sassafras. This custom fell into discredit, however, when sassafras became a notorious remedy for syphilitic and similar diseases.

Regarding the botanical nomenclature of sassafras, Linnaeus[20] in 1737 assigned it to the genus Laurus upon the examination of a specimen of the flower which proved to be clearly distinct from the genus Cornus to which Plukenet had assigned it. In 1753, he gave it the name Laurus Sassafras. The botanical name subsequently underwent the following changes:—

Laurus variifolia, Salisbury.

Sassafras officinale, Nees v. Esenbeck & Endlicher, 1831.

Sassafras Sassafras, Karsten, 1880—82.

Sassafras variifolium (Salisbury), O. Kuntze, adopted in the U. S. Pharmacopœia, 1890.

Pharmacopœial and Commercial Notes.—The wood of the sassafras tree was the part first exported to Europe, as is evidenced from the fact that old European druggists and pharmacopœias mention only the wood, Lignum Sassafras (Pharm. Lond. 1650 and 1680; or Lignum Sassaphras, Pharm. Ultrajectina, 1664). See also our historical section. Subsequently the root, as the more efficient part of the tree, gradually gained favor. Yet we find that some of the later pharmacopœias (e. g. Pharm. Wirtembergica, 1750) began to describe under the caption Lignum Sassafras the root covered with its bark, this part being also official at present (with or without bark) under the same name in many European pharmacopœias. The U. S. Ph. recognizes the bark of the root under the name Sassafras, and the pith under the name Sassafras Medulla.

The oil of sassafras, however, is at present recognized only in a few

pharmacopœias, namely the Spanish, French and the U. S. Pharmacopœias, while many of the older works (e. g. Pharm. Amstelodamensis nova, 1792) gave directions for its preparation by the apothecary.

The bulk of sassafras oil is manufactured in the United States, especially Virginia, North Carolina, New Jersey and Pennsylvania, the operation being conducted in some places as a crude home industry;[23] in others, however, on a respectably large scale. Baltimore until recently has been the center of trade in this article,[24] but New York seems to have become the principal market in recent years.

Enormous amounts of sassafras root are thus consumed, judging from the statement alone[25] that in 1883 in Buckingham county, Virginia, 40 distilleries within a small compass of land were engaged in the manufacture of sassafras oil, consuming daily 80.000 pounds of the root which yielded about 50 gallons of oil, weighing about 450 pounds.

In some parts of the southern states the distillation is carried out systematically on a large scale. The owners of the sassafras grounds, desirous of converting them into arable fields, allow the removal of the root free of charge, if the diggers consent to fill up the holes and cut, pile and leave the trunk of the trees on the land. Great quantities of sassafras are thus obtained and large tracts of ground cleared. It has been stated that old stumps yield as much oil as green ones.

After the roots are split with axes and wedges, they are chopped by means of chopping machines which are capable of chopping 20,000 pounds in 3 hours, an amount which constitutes a charge for the subsequent distillation by means of steam. Continuous steaming exhausts the root in 50 hours and produces about 20 gallons of oil weighing about 180 pounds.

The finished product is shipped to the New York market in 5 gallon cans, each can containing about 45 pounds of the oil.[26]

According to recent market reports by Messrs. Schimmel & Co. (Oct. 1897 and afterwards) the competition of Safrol (the artificially produced principle contained in the oil), owing to its high price, has not been able to supplant the natural oil.

But these commercial conditions are changing constantly as well as are the methods and locations of manufacture.

Addendum.—And now, in conclusion I feel it proper to add my personal experience with sassafras, part of which intrudes on points already named. My boyhood was spent in the country, in Kentucky, where sassafras abounds. I do not remember to have smelled the

fragrance of sassafras trees mentioned by these early authorities unless the trees were broken or bruised. I have passed through great thickets of young and old trees and am sure that the statement that the fragrance is wafted far out to the sea is overdrawn, as I experienced no odor whatever. When land in Kentucky is "worked poor" and turned out to rest, it is likely to spring up in thickets of sassafras, persimmon and black locust. I have heard old farmers in speaking of a farm, say it was too poor to raise sassafras and no greater reflection could be cast on that land. No especial value is put on sassafras wood, it is not sought for fence posts nor is it used to drive away insects of any description. As a remedy, it is used in the spring to "thin the blood", being drank as a tea. Indeed, I do not dislike it as a beverage, early impressions leading me now to occasionally take a package of fresh bark home with me for a family dish of sassafras tea. This is made exactly like coffee is prepared as a beverage and is sweetened and used with cream in the same way. That sassafras tea was a very common beverage in my boyhood's days, may be shown by an incident of fact. I was travelling up the Ohio river on one of the palatial steamers of other days, and the waiter asked a Kentuckian at my side who ordered tea, "what kind of tea" he wanted? "Store tea," he answered, "I kin git pleanty of sassafras at home."

It was not customary for sassafras tea drinkers to keep the root bark separated from the root. They would hang the recently dug root up in a cool place and and shave it as the bark was used. Kentuckians claim that there are two varieties of sassafras, the red sassafras and the white, distinguished only by the bark. The white sassafras is not so aromatic and is bitter to the taste, and they use only the red bark.

In addition to the wood, root and bark, mucilage of the pith is employed in domestic medicine to bathe inflamed eyes. I find a complete description of the domestic uses of sassafras in Rafinesque's Medical Flora, 1830, which for various reasons I feel called upon to reproduce as an ending to this record of sassafras.[28]

"Found from Canada to Mexico and Brazil. Roots, bark, leaves, flowers fragrant and spicy. Flavor and smell particular, similar to fennel, sweetish subacrid, residing in a volatile oil heavier than water. The Sassafrine, a peculiar mucus unalterable by alcohol, found chiefly in the twigs and pith, thickens water, very mild and lubricating, very

useful in ophthalmia, dysentery, gravel, catarrh, etc. Wood yellow, hard, durable, soon loses the smell, the roots chiefly exported for use as stimulant, antispasmodic, sudorific and depurative; the oil now often substituted; both useful in rheumatism, cutaneous diseases, secondary syphilis, typhus fevers, etc. Once used in dropsy. The Indians use a strong decoction to purge and clean the body in the spring; we use instead the tea of the blossoms for a vernal purification of the blood. The powder of the leaves used to make glutinous Gombos. Leaves and buds used to flavor some beers and spirits. Also deemed vulnerary and resolvent chewed and applied, or menagogue and corroborant for women in tea; useful in scurvy, cachexy, flatulence, etc. Bowls and cups made of the wood, when fresh it drives bugs and moths. The bark dyes wood of a fine orange color called *Shikih* by Missouri tribes, and smoked like tobacco."

References to the History of Sassafras.

[1] R. J. Brown, Medicinal Flora of Kansas, Proc. Am. Pharm. Assoc. 1881, p. 446.

[2] Gulielmi Pisonis, De Indiae Utriusque Re Naturali et Medica libri XIV. Amstelaedami, 1658, p. 145.

[3] A relation of the invasion and conquest of Florida by the Spaniards under the command of Fernando de Soto. London, 1686.

[4] F. A. Flückiger, Pharmacognosie des Pflanzenreichs, 3rd ed Berlin, 1891, p. 453 & Appendix.

[5] Carolus Clusius, Simplicium Medicamentorum Historica ..... descripta a. D. Nicolao Monardis, etc. Latio..... donata..... a Carolo Clusio Atrebate. Tertia ed. Antverpiae, 1593, p. 355—359.

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MONTHLY REVIEW.

Chemistry.

Krypton, Neon, Metargon, and Coronium—Recently Discovered Constituents of the Atmosphere.—The discovery of rubidium and caesium by Bunsen and Kirchhoff by the use of the spectroscope opened up a new field for investigation and a study by this method of the solid constituents of the earth revealed several hitherto unknown elements. A more recent investigation, in the same general lines, of the gaseous envelope of the earth, all of whose constituents were supposed to have been isolated and identified, has led to equally surprising results. In the course of the study of argon and helium and attempts to purify them, three new gases have been isolated. An investigation carried on by Ramsay and others showed that no new gases could be obtained from the nitride of magnesium, formed in the preparation of argon; but a study of the residue from liquid air gave unexpected results. In a communication to the Royal Society,[1] Prof. Ramsay and Mr. Travers gave a preliminary notice of the isolation of a new gas. By allowing 750 cc. of liquid air to evaporate until only 10 cc. were left, collecting the gas from this and, after removing the oxygen and nitrogen, sparking over caustic soda with oxygen, they obtained 26.2 cc. of a gas which showed two spectra, a feeble argon spectrum and one which had not before been observed. This latter is characterized by the presence of two very brilliant lines, one almost identical with D_3 and another, a green line, comparable with the green helium line. Measurements by Mr. Baly show the presence of the following lines, all four of which are in the field at the same time: D_1 5895.0, D_2 5889.0, D_3 5875.9, D_4 5867.7.

The spectrum of this gas and that of argon were compared and the results were such as to characterize the gas as one before unknown. The density of the gas, taking the average of two determinations, was 22.49 if oxygen is taken as 16. The determination of the velocity of sound in the gas showed it to be, like argon and helium, monatomic, and of an elementary character. To this constituent of the atmosphere, which is heavier than argon and less volatile than nitrogen, oxygen and argon, they have given the name "krypton" (hidden).

In a later communication[2] to the Royal Society the same authors announce the discovery of two more constituents of atmospheric air. Dr. Norman Collie succeeded, by long-continued diffusion, in separating argon into two portions, one with a density of 19.93 and the other with that of 20.21, a difference too slight to admit of any conclusion as to the presence of more than one substance.

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[1] Proc. Royal Soc., 63, 405.
[2] Ibid., 63, 437.

By the liquefaction of large volumes of argon, using liquid air as the cooling agent, Ramsay and Travers have isolated two gases which they consider to be hitherto unknown elements. When argon was allowed to enter a bulb cooled by liquid air, it formed a liquid; but at the same time a white solid appeared on the sides and in the liquid. After standing some time this mixture was allowed to evaporate slowly and fractions were taken off from time to time. The liquid evaporated off first and practically all of it could be removed before there was any marked change in the solid. The latter evaporated slowly, the last portion when the bulb was removed from the protecting jacket and the finger applied to the surface of the glass. The lighter gas which first evaporated had a density of 17.2, which decreased after further purification to 14.67 and, after a preliminary fractionation, to 13.7. In order to occupy the place in the periodic system which it would be expected to fill, it should have a density of 10 or 11, and the fact that the partial purification reduced the density from 17.2 to 13.7 gives hope of further reduction. An examination of the gas after it had been sparked with oxygen, showed the presence of a number of bright red lines, a bright yellow one, and less conspicuous green and blue lines. The yellow line, although equal in intensity to the yellow lines of sodium, helium, and krypton, was found to have a different wave-length from any of these. This gas, to which they give the name "neon" (new), behaves in a vacuum-tube entirely differently from other known gases. It is rapidly absorbed by the red hot aluminium electrodes, and the color changes from a carmine-red to a brilliant orange.

The gas obtained from the white solid, after the liquid had boiled away, gave a spectrum which was entirely different from that of argon, although resembling it in general character. With low dispersion it gave a banded spectrum; but with a grating single, equidistant, bright lines appeared with the intermediate spaces filled with dim lines. The density of the gas is practically identical with that of argon, being 19.87, and it is monatomic. As the gas had a different spectrum from argon, and behaved differently at low temperatures, they concluded that it was elementary and called it "metargon." It holds the same position towards argon that nickel does to cobalt, having approximately the same atomic weight but different properties. They believed the absence of krypton from the high-boiling portion was due to the fact that in order to prepare it they would have had to use 60,000 times the amount of air they actually used, and then again while metargon is a solid, at the temperature of liquid air, krypton is probably liquid, and therefore more volatile. Moreover, the air from which the krypton was obtained had been filtered and so was freed from metargon.

Professor Schuster called attention to the fact that the spectrum of metargon showed great similarity to the spectrum of carbon, not in a few lines only, but throughout the whole visible spectrum. He thinks this a

strong point against the dissimilarity of the two substances, and is not willing to accept this new element without further evidence. He thinks the spectroscopic evidence would indicate the presence of a compound of carbon mixed with argon or an unknown substance. Ramsay acknowledged the justice of Schuster's claim as to the great similarity of the two spectra, but decided as a result of further experiment that there was no evidence of the presence of carbon. He found that the gas had the same spectrum even after being sparked for two hours with oxygen; that no carbonic oxide bands could be found when the gas, mixed with oxygen, was introduced into a vacuum-tube and that a mixture of carbon monoxide and argon, after being sparked with oxygen, showed no carbon lines or bands. In hundreds of cases they have removed traces of carbon compounds by increasing the intensity of the current; but this had no effect here.

Professor Dewar says he has failed to see any signs of metargon in a sample of pure argon, which Lord Rayleigh had given him, which had been repeatedly liquefied, and he inquires as to the absence of the metargon of Ramsay and Travers. We thus see that while the presence of krypton and neon are fairly well established, more evidence is desired with regard to metargon.

Professor Nasini of Padua has been engaged for some time on a study of the gases emanating from the earth in various parts of Italy, and has already published some of the results obtained. In a brief note communicated to the French Academy, in July, he announced the discovery of a gas which had not been found before on the earth.

The gases from the Solfatara di Pozzuoli contained a gas which gave the wave-length 531.5, corresponding to that of corona 1474 K, attributed to an undiscovered element coronium, which should be lighter than hydrogen. The fumarole of Vesuvius also gave a gas with the same characteristic lines which are approximately those of various elements as iron and potassium; but these elements could not be present in the gas used. One of the lines is very near one of the nitrogen lines; but it cannot be due to nitrogen, as the other lines are not present. This gas to which the name coronium has been given was observed in the corona of the sun and was erroneously supposed, for a long time, to be present in the aurora borealis. It is lighter than hydrogen and cannot be a modification of any known element as it occurs at a distance of 300,000 miles from the body of the sun, and the lines are perfectly sharp and straight and never bent, as are those of all known elements, during solar disturbances.

The appearance of so many new elements at one time will no doubt prove embarrassing with the present arrangement of the Periodic System, and attempts will probably be made to rearrange the system to conform to these new discoveries. Professor Crookes has suggested an arrangement of the elements in the form of a double spiral in which the elements are ar-

ranged in three dimensions in space, the three elements discovered by Ramsay falling in the vertical column under helium between the hydrogen family, containing chlorine, bromine and iodine, and the lithium family. *J. E. G.*

Botany and Pharmacognosy.

Qualitative Examination of Powdered Vegetable Drugs. — In this abstract is embodied the skeleton of a scheme for the determination of unknown powders by Henry Kraemer. While the paper has primarily to do with the consideration of official vegetable drugs, still it has been found necessary to incorporate with it also the important non-official vegetable drugs and food products, as well as the pulveres (composed of inorganic and vegetable substances), some of the compound powders for making various preparations, and all of the principal plant constituents, as opium, guaiac resin, etc. The drugs under consideration are divided, according to the varying shades of color, into seven classes:

I. Color, some shade of light green to gray.

II. Color, nearly white.

III. Color, some shade of yellow.

IV. Color, varying from some shade of tan or ecru to dark brown, or even dark blue or black.

V. Color, some shade of red.

VI. Powders that vary in fineness from Nos. 20 to 30 or less, and are with difficulty examined by means of the microscope without further treatment, as sectioning, etc.

VII. Drugs that do not occur in the powdered condition.

It will be found that there are a few of the powders under the different groups, as No. I, that might be considered advantageously under others, as No. IV. In such cases samples must be arranged under both, and this has been done as far as possible by the author. The largest groups are Nos. I. and IV, and it will be found that they include a more natural grouping than we would at first suppose. Under No. I. we find chiefly the herb and leaf drugs, while under No. IV. are chiefly roots, rhizomes and barks. It has been found necessary, owing to the difference in predominating constituents or tissues, to work up each group differently.

GROUP NO. I. COLOR GREEN TO GRAY.

I. Without Fibro-Vascular Tissue.

Ergota.

II. With Fibro-Vascular Tissues.

A. With Calcium Oxalate Crystals.

a. Crystals Rosette or Star-shaped.

α.—Containing starch.		*β.*—Without starch.
Aralia nudicaulis.	Anisum.	Eucalyptus.
Aralia spinosa.	Buchu.	Fœniculum.
Galla (Chinese or Japanese).	Castanea.	Gaultheria.
	Cannabis Indica.	Hedeoma.
Passion Flowers.	Chimaphila.	Insect Powder.
Podophyllum.	Conium.	Pilocarpus.
Spigelia.	Eriodictyon.	Senna.
		Stramonii Folia.

b. Crystals Cubical, Rhombohedral, Prismatic, Tetragonal or Coffin-shaped.

α. Containing Starch.
Cardamom.
Calumba.
Gelsemium.
Guaiaci Resina.
Pulv. Glycyrrhizæ Co.
Spigelia.
Xanthoxylum.
β. Without Starch.
Eucalyptus.
Gaultheria.
Hamamelis.
Hyoscyamus.
Senna.
Stramonii Folia.
Uva Ursi.

c. Crystals Acicular (Raphides).

Cypripedium. Helonias. Sarsaparilla. Veratrum sp.

Needle-shaped crystals other than calcium oxalate are sometimes found in the following:

Buchu.
Coca.
Chelidonium.
Gaultheria.
Lobelia.

d. Crystals as Fine Sand-like Particles in Particular Cells. Likely to Find Also Acicular Crystals.

Belladonnæ Folia. Belladonnæ Radix. Dulcamara.

B. Calcium Oxalate Crystals Few or Wanting.

a. Simple Hairs Present.

Absinthium.
Belladonnæ Folia.
Buchu.
Castanea.
Chelidonium.
Digitalis.
Eriodictyon.
Eupatorium.
Galla.
Hamamelis.
Hedeoma.
Insect Powder.
Hyoscyamus.
Lobelia.
Matico.
Marrubium.
Mentha Piperita.
Mentha Viridis.
Nux Vomica.
Pulsatilla.
Salvia.
Scoparius.
Scutellaria.
Senna.
Stramonii Folia.
Strophanthus.
Tanacetum.

b. Containing Secretion Hairs or Reservoirs; Aromatic and of Characteristic Odor.

α. With oil-secreting hairs.
Absinthium.
Arnicæ Flores.
Belladonnæ Folia.
Digitalis.
Eriodictyon.
Eupatorium.
Grindelia.
Hedeoma.
Mentha Piperita.
Mentha Viridis.
Pulsatilla.
Salvia.
Scoparius.
Scutellaria.
β. Containing secretion reservoirs.
Angelica.
Arnicæ Radix.
Caulophyllum.
Cimicifuga.
Eucalyptus.
Gaultheria.
Guaiaci Resina.
Kava-Kava.
Leptandra.
Matico.
Pilocarpus.
Piper Album.
Piper Nigrum.
Sabina.
Sumbul.
Tanacetum.

C. Sklerenchyma Cells (Stone Cells) or Fibres (Wood or Bast).

Aletris.	Guaiaci Resina.	Sarsaparilla Mexican.
Arnicæ Radix.	Lappa.	Senega.
Calumba.	Leptandra.	Scoparius.
Cimicifuga.	Piper Album.	Scutellaria.
Chenopodium.	Piper Nigrum.	Spigelia.
Chirata.	Physostigma.	Sumbul.
Cydonium.	Podophyllum.	
Grindelia.	Sarsaparilla (Honduras).	

D. Seeds with their Characteristic Seed Coats.

Chenopodium.	Lobelia.

E. Reserve Starch.

Aletris.	Cypripedium.	Sarsaparilla (Honduras).
Angelica.	Helonias.	Sarsaparilla (Mexican).
Aralia nudicaulis.	Kava-Kava.	Spigelia.
Aralia spinosa.	Leptandra.	Serpentaria.
Caulophyllum.	Physostigma.	Sumbul.
Chenopodium.	Piper Album.	Xanthoxylum.
Cimicifuga.	Piper Nigrum.	

F. Containing Pollen Grains.

Castanea.	Insect Powder.	Passion Flowers.
Chelidonium.	Lobelia.	Pulsatilla.
Eupatorium.	Marrubium.	Scoparius.
Grindelia.	Mentha Piperita.	Scutellaria.
Hedeoma.	Mentha Viridis.	Tanacetum.

G. Inulin Masses or Crystals (Soluble in Hot Water).

Arnicæ Radix.	Chimaphila.	Hamamelis.
Lappa.	Galla.	Uva Ursi.
Taraxacum.	Gaultheria.	

GROUP NO. II. COLOR WHITISH.

I. Plant Tissues or Cell Contents Recognizable.

A. Containing Starch.

a. Unaltered Starch Alone.

Grains characteristic for each; completely soluble in glycerin on heating, and precipitated on the addition of water.

Arrow root starch (Bermuda).	Corn starch.
	Rice starch.
Arrow root starch (Montserrat).	Wheat starch.

b. Altered and Unaltered Starch Grains.

Dextrin.

c. Plant Tissues in Addition to Starch Grains.

The former remain upon treatment with hot glycerin.

α. Do not readily dissolve or swell in cold water and become transparent and sticky.		*β.* Soluble or swell in cold water to form a sticky mass.
	Corn meal.	Acacia (white).
	Corn Bran.	Tragacanth.
	Wheat Flour.	
	Middlings of Wheat.	
	Orris Root.	

B. Without Starch.

a. Acicular Crystals.

Squill.

II. Absence of Plant Tissues.

A. Soluble in Water.

Cane Sugar. | Potassii Bitartras. | Tartar Emetic.

B. Insoluble in Water.

a. Soluble in Alcohol.

Camphor. | Resina Jalapæ.

b. Insoluble in Alcohol.

α. With H_2SO_4 reddish color after some time.
Saccharum Lactis.

β. No color reaction with H_2SO_4.
* Soapy feel.
Talc (or Magnesium Silicates.)
** Affected by acetic acid.
† With effervescence.
Calcii Carbonas Præcipitatus ($CaCO_3$).

Creta Præparata ($CaCO_3$).
Pulvis Cretæ Compositus.
Barium Carbonate ($BaCO_3$).
†† Soluble in acetic acid without effervescence.
Heavy Magnesia (MgO).
Light Magnesia (MgO).
*** Unaffected by acetic acid.
† Soluble in nitric acid.

Calcii Phosphas Præcipitatus [$Ca_3(PO_4)_2$].
Calcii Sulphas.
Barium Sulphate.
Terra alba.
†† Insoluble in nitric acid.
Antimony Oxide.
Antimonial Powder.

GROUP NO. 3. COLOR, SOME SHADE OF YELLOW.

I. Possessing Vegetable Tissues or Cell Contents.

A. Cell Contents Almost Entirely.

a. Starch Grains.

Dextrin.

b. No Starch.

Lycopodium.

B. Cell Contents and Vegetable Tissues.

a. Without Any or but Little Starch.

Aurantii Amari Cortex.
Aurantii Dulcis Cortex.

α. Without crystals of calcium oxalate.
Hydrastis.

β. With crystals of calcium oxalate.
* Crystals very small and likely to be overlooked.
Zingiber (Jamaica).
Turmeric.
Curry Powder.

Limonis Cortex.
Sinapis alba.

b. Containing Starch.

** Crystals of calcium oxalate rosette-shaped and numerous.
Rheum.
Tr. Rhei Aromatica.
Tr. Rhei Dulcis.
Rhamnus Purshiana.
*** Crystals cubical, tetragonal or coffin-shaped and numerous.

Calendula.

Calumba.
Glycyrrhiza (Russian).
**** Needle-shaped crystals.
Angustura.

II. Few or No Fragments of Vegetable Tissues.

A. Burn, Giving Off Odor of SO_2.

Sulphur Lotum.
Sulphur Præcipitatum.

B. On Burning do not Give Off Odor of SO_2.

a. Nearly Colorless in Glycerin Mount.

Mastic.

b. Yellowish in Glycerin Mount.

α. Containing oil globules.
Scammonium.

β. Transparent or translucent.
Resina.
Sandarac.
Resina Podophylli.
Aloes (Cape).
Chrysophanic Acid.

γ. More opaque.
Ammoniac.
Gamboge.

GROUP NO. 4. TAN, BUFF, ECRU TO DARK BROWN OR BROWNISH, BLACKISH AND BLUISH-BLACK.

I. Animal Tissues.

Fragments on being ignited on platinum foil give off odor of burning animal substance.

A. Do not Color Mounts of Glycerin or Glycerin + Chloral.

Cantharis (Russian).
Mylabris Cichorii.

B. Glycerin Mounts Colored a Carmine Red.

Coccus.

II. Presence of Vegetable Tissues But No Fibro-Vascular Elements.

Ergota.

III. Fibro-Vascular Elements Among Other Vegetable Tissues.

A. Containing Starch.

a. Possessing Calcium Oxalate Crystals

α. Crystals rosette or star-shaped.
Althæa (peeled).
Althæa (unpeeled).
Aralia nudicaulis.
Aralia spinosa.
Asclepias.
Cascarilla.
Canella alba.
Composition powder.
Euonymus.
Galla (Aleppo).
Geranium.
Gossypii Radicis Cortex.
Jalapa.
Juglans.
Myrica cerifera.
Podophyllum.
Pimenta.
Pulv. Aloe et Canella (Hicra Picra).
Pulv. Jalapæ Co.
Pulv. Rhei Comp.
Hufland's Baby Powder.
Rubus.
Rumex crispus.
Serpentaria.
Stillingia.
Syr. Trifolii Comp.
Sarsaparilla (American).
Viburnum prunifolium.
Syr. White Pine Compound.

β. Tendency of crystals to cubical, tetragonal, hexagonal, or coffin-shape.
Aspidosperma.
Calamus (peeled).
Calamus (unpeeled).
Cardamom.
Cinnamon.
Ext. Glycyrrhizæ.
Ext. Sarsaparillæ Fld.
Frangula.
Gelsemium.
Glycyrrhiza (Spanish).
Ginger, Charcoal and Magnesia.
Hufland's Baby Powder.
Iris.
Krameria.
Myrica cerifera.
Prunus Virginiana.
Pulv. Glycyrrhizæ Co.
Quillaja.
Syr. White Pine Comp.
Ulmus.
Viburnum opulus.
Viburnum prunifolium.
Xanthoxylum.

γ. Raphides (or needle-shaped crystals) of calcium oxalate.
Cacao.
Calamus.
Cinnamon.
Hydrangea arborescens.
Ipecac.
Pulv. Aromaticus.
Pulv. Ipecac. et Opii.
Tr. Catechu Comp.

δ. Crystal sand.
Belladonnæ Radix.
Cinchona.
Horsenettle (Solanum Carolinense).
Phytolaccæ Radix.
Quassia (Surinam).
Tinct. Cinchonæ Comp.
Zingiber (African).

b. Containing Starch, But Few or No Crystals of Calcium Oxalate and Rather Numerous Fragments of Tissues.

a. Possessing oil-cells or secretion reservoirs of characteristic odor.
Calamus (unpeeled).
Capsicum.
Colchici Semen.
Cubeba.
Cinnamon.
Piper nigrum.
Sabina.
Sanguinaria.
Sassafras.
Stillingia.
Sumbul.
Syr. Trifolii Comp.
Valeriana.
Zingiber (African).

β. Sklerenchyma as stone cells or fibres.
Aconiti Radix.
Apocynum.
Black Mustard Hulls.
Capsicum.
Chenopodium.
Coffee.
Colocynthis.
Colchici Semen.
Cubeba.
Guarana.
Pareira.
Physostigma.
Phytolaccæ Radix.
Podophyllum.
Sassafras.
Serpentaria.

c. Containing Starch; Few Tissue Fragments and No Calcium Oxalate Crystals.

Amylum Iodatum.
Bryonia.
Colchici Cormis.
Opium.
Tonka.

B. With Little or No Starch.

a. Containing Calcium Oxalate Crystals.

a. Crystals rosette or star-shaped.
Anisum.
Carum.
Chimaphila.
Conium.
Coriander.
Cusso.
Cloves.
Clove Stems.
Fœniculum.
Quassia.
Santonica.

β. Crystals cubical, tetragonal or prismatic.
Aurantii Amari Cortex.
Aurantii Dulcis Cortex.
Gaultheria.
Gentian.
Hamamelis.
Illicium.
Insect Powder.
Limonis Cortex.
Quassia.
Quercus alba.
Sambucus.
Uva Ursi.
Vanilla.

γ. Crystals in raphides.
Vanilla.

b. Crystals in Fine Sand-like Particles.

Cinchona.
Quassia.
Tobacco.

C. No Starch or Crystals of Calcium Oxalate, But Masses or Crystals of a Carbohydrate (Inulin).

The Inulin occurs in numerous irregular, nearly transparent or grayish fragments, sometimes perfect sphere-crystals. These masses or crystals are soluble in hot water; insoluble in alcohol and glycerin.

Inula.
Lappa.
Pyrethrum.
Taraxacum.

IV. Possessing Secretion Hairs, Cells or Reservoirs and of somewhat Characteristic Odor.

A. Secretion Hairs.

Anthemis.
Arnicæ Flores.
Belladonnæ Folia.
Cusso.
Lupulin.
Santonica.

B. Secretion Cells or Reservoirs.

Aurantii Amari Cortex.
Aurantii Dulcis Cortex.
Inula.
Limonis Cortex.
Macis.
Pyrethrum.

V. Presence of Sklerenchyma Cells (Stone Cells) or Fibres (Bast or Wood).

A. Stone Cells.

Aconiti Radix.
Asclepias.
Black Mustard Hulls.
Cocoa Shells.
Canella alba.
Capsicum.
Cardamom.
Clove Stem.
Coffee.
Colchici Semen.
Colocynthis.
Composition Powder.
Cubeba.
Delphinium.
Galla.
Guarana.
Hiera Picra.
Illicium.
Jalapa.
Juglans.
Pareira.
Prunus Virginiana.
Pulv. Jalapæ Comp.
Quercus alba.
Pimenta.
Pyrethrum.
Rumex crispus.
Syr. Trifolii Comp.
Vanilla.
Viburnum prunifolium.

B. Sklerenchyma Fibres.

Althæa.
Anthemis.
Apocynum.
Arnicæ Flores.
Aspidosperma.
Belladonnæ Radix.
Cardamom.
Cascarilla.
Cinchona.
Cinnamon.
Cloves.
Clove Stems.
Cubeba.
Euonymus.
Ext. Glycyrrhizæ.
Ext. Sarsaparilla (Powder).
Frangula.
Gelsemium.
Ginger, Charcoal and Magnesia.
Glycyrrhiza.
Gossypii Rad. Cort.
Hydrangea.
Illicium.
Inula.
Ipecac.
Juglans.
Krameria.
Lappa.
Myrica Cerifera.
Pareira.
Phytolaccæ Radix.
Podophyllum.
Fld. Prunus Virginiana.
Pulv. Aromaticus.
Pulv. Glycyrrhizæ Comp.
Pulv. Ipecac. et Opii.
Pyrethrum.
Quassia.
Quercus alba.
Quillaja.
Rubus.
Rumex Crispus.
Sabina.
Sassafras.
Serpentaria.
Stillingia.
Sumbul.
Syr. White Pine Comp.
Tr. Cinchonæ Comp.
Ulmus.
Viburnum opulus.
Willow Charcoal.
Xanthoxylum.

VI. Absence of Sklerenchyma.

Gentian.

VII. Characteristic Pollen Grains.

Anthemis.
Arnicæ Flores.
Carthamus.
Caryophyllus.
Crocus.
Rosa centifolia.
Sambucus.
Santonica.

VIII. Little or No Indication of Plant Tissues.

A. Containing Starch.

Amylum Iodatum.
Bryonia.
Colchici Cormis.
Ext. Glycyrrhizæ.
Opium.

B. Without Starch.

a. Particles of Organized Form.

Corn Smut.

b. Particles of Inorganic Form.

α. Remain opaque (not affected) in glycerin.	Goa Powder.	Aloes (Socotrine).
Aloes (Socotrine).	*β.* Become more or less transparent in glycerin.	Catechu.
Benzoin.		Kino.
Elaterium.	Aloes (Barbadoes).	

GROUP NO. 5. COLOR REDDISH.

I. Animal Fragments (Test by Burning).

Cochineal.

II. Vegetable Fragments.

A. Containing Starch.

a. Containing Calcium Oxalate Crystals.

Krameria. Hufland's Baby Powder. Pulv. Rhei. Comp.

b. Few or No Calcium Oxalate Crystals.

Cocoa.	Myristica.	Sassafras.
Capsicum.	Sanguinaria.	

B. With Little or No Starch.

a. Containing Calcium Oxalate Crystals.

Coca.	Illicium.	Santalum rubrum.

III. No Vegetable or Animal Tissues.

Kino.

GROUP NO. 6. CONTAINING POWDERS THAT ARE RELATIVELY COARSE.

I. Containing Numerous Vegetable Fragments.

A. Containing Starch.

a. Containing Crystals of Calcium Oxalate.

α. Crystals rosette or star-shaped.	or more or less coffin-shaped.	Syr. Trifolii Comp.
Canella alba.	Berberis aquifolium.	Viburnum opulus.
Frangula.	Cardamom.	*γ.* Crystals acicular.
Juglans.	Frangula.	Cocculus.
Rheum.	Iris Florentina.	Iris Florentina.
Syr. Trifolii Comp.	Juniperus.	Sarsaparilla.
β. Crystals cubical, tetragonal, prismatic.	Myristica.	*δ.* Crystals in fine sand (crystal sand).
	Quillaja.	Dulcamara.

b. Containing Starch But No Calcium Oxalate Crystals.

Chenopodium.	Myristica.	Sago (Imitation).
Corn Bran.	Orris Root.	Strophanthus.
Grits.	Pepo.	
Mezereum.	Sago (True).	

B. With Little or No Starch.

a. Animal Tissues.—On Burning Fragment on Platinum Foil Gives Off Odor of Burning Tissue.

α. Does not color glycerin.
Cantharis.
Mylabris.
β. Gives a carmine-red color to glycerin.
Cochineal.

b. Without Starch But Containing Vegetable Tissues.

α. With Secreting or non-secreting hairs.
Anisum.
Arnicæ Flores.
Cannabis Indica.
Humulus.
Rhus glabra.
Rubus idœus.
Strophanthus.
Tea.
β. Sklerenchyma cells (i. e., stone cells).
Amygdala Amara and Amygdala Dulcis.
Black Mustard Hulls.
Cocoa.
Cocoa Shells.
Cocculus.
Coffee.
Colocynthis.
Cydonium.
Linum.
Pepo.
Sinapis Alba
Sinapis Nigra.
Staphisagria.
Stramonii Semen.
γ. Sklerenchyma fibres.
Berberis aquifolium.
Chicory.
Chirata.
Hæmatoxylon.
Matricaria.
Pine Shavings.
Taraxacum.
Triticum.
δ. Sklerenchyma cells or fibres wanting.
Aurantii Amari Cortex.
Aurantii Dulcis Cortex.
Gentian.
Limonis Cortex.
Sambucus.
Sassafras Medulla.
Taraxacum.
Zea.

II. Containing Few Fragments of Tissues.

A. Possessing Oil.

Asafetida.
Myrrh.

B. No Oil; and Glycerin Mounts Nearly Transparent.

Manna.
Pix Burgundica.
Sugar.
Terebinthina.

C. No Oil; and Mounts in Glycerin More or Less Opaque.

Confectio Rosæ.
Lactucarium.

No. 7. Vegetable (Also Animal) Drugs which do not Occur in Powders but in Masses or Liquids.

I. Liquids.

Balsam Peru.
Copaiba.
Gurjun Balsam.
Mel.
Styrax.

II. Semi-Fluid or Nearly Solid.

Bals. Tolu.
Prunum.
Resina Podophylli.
Tamarindus.

III. Solid.

Elastica.
Resina Podophylli.

REMARKS.

A number of interesting features have been brought out in this investigation. In fact it opens up possibly an entirely new method in the study of our drugs at large.

1) In the first place, in the color of the powder certain characteristic and diagnostic features are brought to light. Leaf and herb drugs in the powdered condition should be greenish or grayish, and not blackish or brownish-black; many roots and rhizomes ought to be a light tan rather than a dark brown, etc. The value of Taraxacum and other more or less important drugs rich in reserve materials, as inulin, starch, etc., may be ascertained, as these reserve materials are contained, no doubt, in greatest abundance in the plant at the time that the active medicinal agents are present in likewise greatest amount.

2) Certain facts, as the presence of pollen grains in Chestnut leaves will cause us to go into the woods and study the ecological and biological relations of the plants which yield us our drugs. For, without this study upon Nature herself, we shall never know what value to place upon such observations or their real significance.

3) The presence of reserve starch in leaves and a diminution in calcium oxalate in any part of the plant where normally it is present, will cause us to open our doors to the study of micro-organisms and inquire as to what these things have to do with the deterioration of drugs and the spoliation of medicinal preparations.

When these pharmacognostical problems are understood then we will cease to devote our energies to indiscriminately mixing certain things together in our attempts to make elegant pharmaceutical preparations, but will start out to know what causes the difficulty; and, knowing this, we know how to proceed intelligently and in a scientific manner, just as we proceed in certain chemical-pharmaceutical work.

3) The use of the microscope in the examination of vegetable drugs (whether they be crude or powdered), as also in the examination of animal substances and chemical compounds, is an application of this instrument to a degree that this communication indicates—to some extent at least—the widest practical application. In fact, it opens up the necessity for making microscopical examinations and micro-chemical tests to a much greater degree than heretofore on the crude as well as powdered drug.

The author would impress again upon all investigators the necessity for accurate measurements of tissues and contents of materials which are studied; as also the name of the media or reagent in which the specimen lies or to which it has been subjected. KOH, chloral, glycerin, etc.—all of these have the property of affecting the thickness and character of the cell walls and cell contents, and it is upon these characteristics that we must rely for our useful studies of crude and powdered drugs.

[Read before Balt. Meeting of the Am. Pharm. Assoc'n.] *H. K.*

Cochineal in the Canary Islands.—In a recent article on plant life in the Canary Islands, Alice Carter Cook has described very interestingly the peculiar conditions found in this group and the striking floral adaptations to these conditions.

Owing to the lack of sufficient rain, the considerable dry, stony and craggy areas have a decidedly desert aspect. The plants growing in such an environment abound in forms having fleshy, hoary and coriaceous leaves and stems. Especially abundant are the *Crassulaceæ* and *Euphorbiaceæ*, and the general aspect is that of the American desert with its many cacti.

OPUNTIA TUNA, the wild prickly pear with bright scarlet fruits.
Fig. 1.

On the hillsides, an ugly growth of *Opuntia*, the prickly pear, is characteristic. There are two wild species both abundant and greatly esteemed for the sake of the pulpy fruit. This fruit, of a bright scarlet color, in the drier islands where rain sometimes does not fall for several years, serves as a substitute for water. In Fig. 1 is well shown the *Opuntia tuna* with its bright scarlet fruits and spiny surfaces.

One species of *Opuntia* was formerly extensively cultivated as the host plant of the cochineal insects. Since the discovery of the aniline dyes, this industry has wellnigh reached a condition of ruin. Still many fields exist. The cacti are planted in rows and are sown by barefooted women with the

cochineal insects, the tiny things being placed on the plants by hand. In the wet season, after the insects have been put on the cacti, there is danger that the heavy rains may wash them off. In order to prevent this, the branches are tied up in white cloth "and a field so doctored is ridiculously suggestive of a regiment of bandaged feet." The cactus field presenting this aspect is shown in Fig. 2. As the insects develop and come to the time of ripening, they surround themselves with a white cottony protective excretion, giving to the old *Opuntia* plants a peculiar appearance. This is illustrated in Fig. 3. The island of Teneriffe is the center of the cochineal industry in the Canaries. [Pop. Sci. Month. 53, p. 763.] *R. H. T.*

New Remedies.

Antipyretics.—The method of classification adopted by V. Coblentz in a recent paper on modern synthetic medicinal products consists in arranging the bodies into general products according to medicinal action; as, for example, antipyretics, antiseptics, hypnotics, etc. Under these groups the compounds are arranged into their various chemical classes. The object of this has been to give prominence to the presence of certain groupings which occur in each of these classes, and to the influence exerted by the introduction of new groupings; in other words, to show, wherever possible, the relationship between chemical constitution and physiological action.

Group I.—Acetylated Amines and Derivatives.

As prototype of this class we have the well-known—

Antifebrine, $C_6H_5NH.CH_3CO$: Acetanilide or Phenylacetamide.

Closely related to antifebrine are—

Antisepsine, $C_6H_4(Br).NH(CH_3CO)$, Para-bromo-acetanilide.

Iodo-Antifebrine, $C_6H_4(1).NH.CH_3CO$, Para-iodacetanilide.

Acet-p-Toluide, $C_6H_4(CH_3).NH.CH_3CO$: The *ortho* compound is also employed.

Methacetine, $C_6H_4(OCH_3).NH.CH_3CO$: Para-oxy-methyl-acetanilide.

Exalgine, $C_6H_5N.(CH_3).CH_3CO$: Methylphenylacetamide.

Cosapyrine, $C_6H_4(SO_3Na).NH.CH_3CO$: Acetyl-sodium-sulphanilide.

Diacetanilide, $C_6H_5N(CH_3CO)_2$.

Benzanilide, $C_6H_5NH.C_6H_5CO$.

Bromamide, $C_6H_2Br_3NH_2.HBr$: Tribromaniline hydrobromide.

Erdmann and von Nencki have shown that the introduction of the carboxylic or sulphonic acid group into bodies of well-defined toxic properties results in a marked diminution of this action: thus benzene and its derivatives, aniline, naphthalene, phenol, pyridine and quinoline, are far more toxic to the organism than their carboxylic acids; as benzoic acid, naphthalene-pyridine and quinoline carboxylic acids; and the same is true of the corresponding sulphonic acids. The first named poisonous class of aromatic bodies on entering the system readily submit to oxidation and reduction, giving rise to toxic action, but the stability of the carboxyl (COOH) group

and its resistance to processes of further oxidation serve to protect the derivatives from further chemical change.

Group II.—Para-Phenetidine and Derivatives.

In the human system para-amido-phenol—

$$C_6H_4(\overset{(1)}{O}H)\overset{(4)}{N}H_2$$

and para-acet-amido-phenol—

$$C_6H_4(\overset{(1)}{O}H)\overset{(4)}{N}HCH_3CO$$

Cochineal Culture. The "newly planted" insects protected from rain by cloths.
Fig. 2.

cause a diminution of temperature of from 2° to 3° C. (dose 0.5 grm.), frequently accompanied by chilliness, vomiting, and tinnitus aurium. If the hydrogen of the hydroxyl group in the former be replaced by an alkyl group, the antipyretic properties remain unchanged, whilst the toxic action is thereby lessened.

The maximum antipyretic effect is shown by those bodies containing the methyl group, and the minimum by those containing the ethyl group.

If the hydrogen of the amido group in para-acet-amido-phenetol be replaced by an alkyl, a substance of narcotic properties is obtained; as, for example, methylphenacetin—

$$C_6H_4(\overset{(1)}{O}C_2H_5)N(\overset{(4)}{C}H_3)COCH_3.$$

If an ethyl group enters, a lessening of narcotic effect results.

According to von Nencki and others, this class of compounds decomposes in the organism, with the production of *p*-amido-phenol or *p*-acet-amido-phenol, upon the presence of which the analgesic properties of phenacetin and its derivatives depend; if the hydrogen of the amido group as above cited is replaced, a narcotic effect is manifested through the agency of the liberated alkyl groups.

The best known of these derivatives of phenetidine—

$$C_6H_4(\overset{(1)}{O}C_2H_5)\overset{(4)}{N}H_2$$

is the acetyl compound or *Phenacetin*—

$$C_6H_4(\overset{(1)}{O}C_2H_5)N\overset{(4)}{H}CH_3CO$$

aceto-para-phenetidine which is soluble 1 in 1,400 of cold water.

The success of phenacetin led to the introduction of a number of similar phenetidine derivatives, in which the acetyl radicle was replaced by other acidyl groups, the object being to eliminate all toxic effects, and increase rapidity of action and solubility.

Owing to the insolubility of phenacetin, one of the earliest endeavours was to obtain a compound of the same properties, but sufficiently soluble to enable it to be employed in solution. This was accomplished by the addition of a basic group, glycocoll ($CH_2NH_2.COOH$), which, through its amido group, is capable of uniting with acids, forming very soluble salts.

This compound was introduced under the title of—

Phenocoll, $C_6H_4(OC_2H_5).NH.CH_2NH_2CO$, amido-acet-*p*-phenetidine. The soluble salts are the hydrochloride, acetate, and salicylate (*Salocoll*).

Lactophenin, $C_6H_4(OC_2H_5).NH.CO—CH(OH)CH_2$: Lacto-*p*-phenetidine. Here the lactyl group replaces the acetyl of phenacetin. The formyl group (HCO), when introduced, produces an antiseptic. Lactophenin is soluble to the extent of 1 in 330 parts of water.

Sedatin, $C_6H_4(OC_2H_5)NH.C_4HgCO$, valeryl *p*-phenetidine.

Saliphen—

$$C_6H_4(OC_2H_5)NH.C_6H_4(OHCO$$

Salicyl-*p*-phenetidine, insoluble in water.

Triphenin, $C_6H_4(OC_2H_5)NH(CH_3CH_2CO)$, propionyl-*p*-phenetidine is soluble 1 in 2,000 parts of water.

Apolysin—

$$C_6H_4(OC_2H_5).NH.CO.CH_2.C.(OH)(CH)_2(COOH)_2,$$

mono-phenetidine-citrate is soluble 1 in 55 parts of water.

Citrophen, $[C_6H_4(OC_2H_5)NH.CO]_3C_3H_4OH$: Citro-*p*-phenetidine. Here there are three phenetidine groups to one molecule of citric acid. Soluble 1 in 40 parts of water.

Cochineal Culture. Old plants of *Opuntia ficus-indica* with the "ripe" insects surrounded by a white, cottony, protective excretion.

Fig. 3.

Kyrofin, $C_6H_4(OC_2H_5)NH.CH_2.OCH_3.CO$, methyl-glycolic-*p*-phenetidine is soluble 1 in 600 parts of water.

Malarin, aceto-phenone-phenetidine-citrate. Insoluble.

Phesin, $C_6H_3(OC_2H_5)SO_3Na.NHCH_3CO$, acet-*p*-phenetidine-sodium sulphonate. Very soluble.

Oxyphenacetin.

Amygdophenin, $C_6H_4(OC_2H_5)NH.CO.CH(OH)C_6H_5$, phenyl-glycolyl-*p*-phenetidine. Insoluble in water.

Vanillin-Para-Phenetidine—

$$C_6H_3(OH)(OCH_3)CH.N.C_6H_4\ OC_2H_5.$$

Para-Phenetidine-Furfural—

$$C_6H_4(OC_2H_5)N.C_4H_3O.CH.$$

(To be continued.)

Physiology and Therapeutics.

The Physics of Smell.—Before the physical section of the Br. Ass'n. Adv. Sc. the President, Prof. Ayrton, reported some interesting experiments on the physics of smell. He found that the metals, even iron, steel and brass, contrary to general opinion, have no smell when perfectly clean and not touched by the hand; yet when slightly breathed upon or rubbed with the skin of the hand, their characteristic smells come out. The finger will cause a peculiar smell when rubbed on aluminium even through a layer of moist linen. He attributes the effect to chemical action (the production of hydrocarbons), which is aided by the friction of rubbing; and thinks that no particles of the metal reach the nose. Another interesting result is that the diffusion of smells through the air is extremely slow, the appearance of quick passage being due to currents of air. Even in active smelling we need to sniff up the odor, thus producing an inward draught through the nostrils. He finds, indeed, that we have two ways of stimulating our sense of smell; that mentioned, the sniffing inwards, and, besides that, the stimulation from particles in the mouth, which give flavors when we breathe outwards. "We can experience", he says, "alternately two totally different smells by placing one substance outside the nose and the other inside the mouth, the one smell being noticed in inhaling and the other in exhaling." The rapidity of diffusion of most smells is greatly increased in a vacuum.

[Nation, 67, p. 274.] *E. K.*

Sensation of Taste.—I am in receipt of the Bulletin of the University of Wisconsin on the Action of Solutions on the Sense of Taste.* You will note that at the meeting of the A. Ph. A. I called attention to the desirability to have standards of taste established that can be used for reference and that in my opinion there should be subdivisions in the standards now used; for example, many different sensations seem to me to be included under the single term sour or bitter. Thus, to me the sourness of a diluted solution

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* See p. 381 of this journal.

of muriatic acid is accompanied by a sensation of sweetness that is quite different from any sensation I obtain from a dilution of sulphuric acid or of citric acid carried to the limit of the sense. In other words, the sensation of the diluted muriatic acid is not the same to me as the sour of diluted citric, sulphuric or lactic acids and I believe that the pure sour sensations produced by citric, lactic and sulphuric acids form a class in themselves different from the sourness of nitric or muriatic acid. In studying this paper of Mr. Kahlenberg, I find that he has taken up the subject of positive taste sensation and it seems to me there is a negative side also. In other words, the sensation of taste may be due to contrast as is due the sensation of cold or of heat to contrast. A body that feels cold to the touch at one time may feel warm at another; so it seems to me that the taste imparted by a substance at one time may be quite different from the taste imparted by the same substance at another time. Thus I believe that a body capable of imparting a certain effect to the tongue can modify the sensation of taste to such an extent as to make the sensation of another body very different from what it would be had it been tasted before the other substance had exerted its influence on the sense of taste. This is seen in the sensation that follows after having eaten very peppery substances, or in the sweetening of coffee or tea after having eaten syrup in quantity, and while I am on this subject of contrasts I might say that a body absolutely without taste under one condition may be made, with me, to become possessed of a decided taste. I think this can be exemplified in no way better than by the following experiment: Dissolve half a teaspoonful of bicarbonate of soda in four ounces of water and drink the solution. Then immediately take a drink of pure distilled water and it will be seen that the distilled water has a sweet taste, as much so as though a solution of sugar were in the mouth under ordinary conditions.

This leads me to another thought, namely, that Prof. Kahlenberg did not consider the change in taste that produces one sensation of taste to begin with and another to end with. Thus, if one chews a few twigs of dulcamara, he will find that the sensation produced is one of bitter; then let him spit out the magma and note the after-taste that follows. The bitterness will very soon disappear and in its place will come a sensation of sweet, decidedly sweet, on which account the name dulcamara arose, as well as the common name bittersweet. Other substances possess similar qualities and I cannot tell just how such substances can be defined scientifically or the action of such substances be explained.

[From a communication* by Prof. Lloyd.] *E. K.*

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* The above communication was not sent to be published, but inasmuch as the subject of the definition of color and taste and odor is very likely to be taken up seriously at the next meeting of the Am. Pharm. Ass'n., it will be well to have as much preliminary discussion as possible on the subject. See also the abstract of Prof. Ayston's address "on the physics of smell." *E. K.*

Literary.

Books and Pamphlets Received.

Librairie Felix Alcan—Paris. Dictionnaire de Physiologie par Charles Richet, Professeur de Physiologie à la Faculté de Médecine de Paris. Troisième fascicule du tome III, pp. 609 to 948, avec 130 gravures dans le texte: Chloroforme—Cobaye. 1898.

Verlag von Julius Springer—Berlin. Schule der Pharmacie, Bd. III: Physikalischer Theil. Bearbeitet von Dr. K. F. Jordan. Ein Bd., pp. VIII, 265, mit 101 in den Text gedruckten Abbildungen. 1898. M. 3.00.

——Vorschriftenbuch für Drogisten. Die Herstellung der gebräuchlichen Handverkaufsartikel von G. A. Buchheister. Dritte vermehrte Auflage. Ein Bd., pp. x, 443. 1898. M. 8.00.

——Pharmaceutischer Kalender 1899. Herausgegeben von Dr. B. Fischer und G. Arends. Achtundzwanzigster Jahrgang. In zwei Theilen, pp. 206 und 66, XXXIII, 183. 1898.

Verlag von Leopold Voss—Hamburg. Ueber die zunehmende Bedeutung der anorganischen Chemie. Vortrag, gehalten auf der 70. Versammlung der Gesellschaft deutscher Naturforscher und Aerzte zu Düsseldorf von J. H. van't Hoff. Pamphlet, pp. 17. 1898. M. 0.60.

Author—Cincinnati. A compilation of the volvae of the United States by C. G. Lloyd. Pamphlet, pp. 22. 1898.

Author—Detroit. Ergot aseptic by E. M. Houghton. Pamphlet, pp. 4. Reprinted from the Therapeutic Gazette.

Agr. Exp. Station—Madison, Wis. Bulletin No. 69. Pasteurization as applied to butter making. Pamphlet, pp. 40.

Author—Louisville. Some preparations of the national formulary. By C. Lewis Diehl. Pamphlet, pp. 8, reprinted from the Journ. Am. Med. Ass'n.

Reviews.

VORSCHRIFTENBUCH FÜR DROGISTEN. Die Herstellung der gebräuchlichen Handverkaufsartikel von G. A. Buchheister. Dritte vermehrte Auflage. Ein Bd., pp. x, 443. Verlag von Julius Springer, Berlin. 1898. M. 8.00.

Half a year ago the first part of Buchheister's Handbuch der Drogisten-Praxis was reviewed in this journal (see p. 208). The Vorschriftenbuch für Drogisten, though an independent treatise, con-

stitutes the second part of the handbook. Whereas the former has gone through five editions, the second part, having been begun later, has passed through three editions since 1891. The author's reason for writing such a treatise lay largely in the economic and legal status of pharmacy of Germany. The practice of pharmacy, as is well known, is restricted to the apothecary. The druggist, however, has the right to sell medicinal articles which are "open", i. e. not restricted by law. As a result of this dual system much that is contained in the pharmaceutical manuals of Hager and Dieterich is nonavailable to the druggist. The manual before us, therefore, gives but very limited space to medicinal preparations proper, but emphasizes the classes of preparations considered secondary in the manuals of Hager and Dieterich: cosmetics, varnishes, inks, stains and a host of other articles useful not only in domestic economy, but also in the arts. A chapter on articles for photography has been incorporated since the second edition.

The formulas are arranged in chapters according to their use. Each chapter is prefaced by an introduction which furnishes much needed general information with regard to each class of preparations. This arrangement certainly is far preferable to the alphabetical order, which is supplied by a complete index. It is impossible to judge of the value of the formulas except by experience. This formulary has evidently stood this test satisfactorily if one may judge from the rapidity with which it has passed through three editions. Formularies will always contribute an important part of the druggist's working library. It is farsighted economy which prompts the investment in good books, especially of this kind. *E. K.*

A Text-book of Chemistry intended for the use of pharmaceutical and medical students by Professor Samuel P. Sadtler and Professor Henry Trimble. Second revised and enlarged edition. In two volumes. Vol. II.—Analytical chemistry and pharmaceutical assaying. One vol., pp. 336. J. B. Lippincott Company, Philadelphia. 1898.

What is to be the character of the traditional course in qualitative chemical analysis, and what role is it to play in the first year's work in chemistry, is a question that has been asked repeatedly by chemical teachers for several decades past. The old time drill in qualitative analysis which has been inaugurated by Liebig was some-

thing not to be parted with lightly. The introduction of chemical laboratory methods into the German gymnasium, however, has caused a reaction to set in. This movement, of which Arendt has been one of the principal advocates, has within recent years affected the methods of many professors of chemistry who teach the elementary course at our universities and colleges. Their object, as far as this part of their course is concerned, is to teach analytical chemistry rather than chemical analysis. It cannot be said, however, that this movement has very largely affected teaching methods in professional and technical institutions. In most of these institutions the analysis still plays a more important role than the chemistry. It is true, the one cannot be divorced from the other, yet it can readily be seen how in one case more stress can be laid on the chemistry of the subject involved, and in another on the analytical features.

It becomes readily apparent that the subject matter of this second volume is presented from the standpoint of chemical analysis. That chemical analysis must play an important role in the pharmacist's training, there can be no doubt. The question, however, may justly be asked whether or not much stress should be laid upon the analytical side in connection with his first survey of the chemical field. It has already been pointed out by the writer in connection with the first volume that this work was, no doubt, primarily intended for the numerous students of the authors. The course at the Philadelphia College and the required amount of chemical work at this and similar institutions naturally were the determining factors in the make up of this second volume as well as of the first. Viewed from their standpoint the book must in general be considered a decided step in advance over the work that was offered to Philadelphia students in 1884 when the writer began systematic laboratory work in chemistry under the guidance of one of the authors of this work, the principal author of this second part, the late Professor Trimble, whose early death all who have known him must greatly regret.

The contents are divided into five parts and sixteen chapters. The principal divisions are qualitative analysis; quantitative analysis, gravimetric and volumetric; pharmaceutical assaying, including the assay of organic drugs and their preparations, the gasometric estimation of the U. S. P., etc.; urine analysis; and special processes under which are included water analysis, milk analysis and the estimation of nitrogen.

No doubt, several other chapters might have been added as appropriately as some of those included. The same is true of the subjects of the various chapters. Yet most teachers of chemistry in the various colleges of pharmacy will find a fair and very satisfactory field from which to select. The book will scarcely serve the purpose of self-instruction, but ought to be very serviceable as a laboratory guide to be used with discretion by a competent instructor. The work as a whole is a valuable contribution to American pharmaceutical literature. Whereas the bookmaking is very satisfactory in general, it seems to have been poor economy to insert some of the illustrations that are of decidedly questionable merit. The cuts in the second volume are hardly in keeping with those of the first. However, this is one of the easiest things to improve in case of revision. *E. K.*

Ueber die zunehmende Bedeutung der anorganischen Chemie. Vortrag, gehalten auf der 70. Versammlung der Gesellschaft deutscher Naturforscher und Aerzte zu Düsseldorf von J. H. van't Hoff. Sonderabdruck aus Zeitsch. f. anorg. Chemie, Bd. 18, Heft I. Pamphlet, pp. 17. Verlag von Leopold Voss, Hamburg. 1898. M. 0.60.

The majority of chemists are possibly so wrapt up each in his special sphere of activity that they often loose sight of the development in branches other than the one in which they are especially interested. Those who have not been following carefully the development of general inorganic chemistry—and this may doubtless be said of the majority of chemists of to-day—will derive benefit and pleasure from this address by van't Hoff. Arranging the exact sciences according to the complexity of their respective problems—mathematics, physics, chemistry and biology—it becomes readily apparent that the problems of inorganic chemistry are more simple like those of physics, whereas those of organic chemistry approximate those of biology in complexity.

It was his mathematical and physical training which enabled Lavoisier to cast aside the fetters of the phlogistic school, using the chemical discoveries of the phlogisticists, Priestley and Scheele, to break down their pet theories. It was inorganic chemistry that for a long time profited most by the work of Lavoisier, Davy, Berzelius and others. Later followed the ascendency of organic chemistry which seemed to carry away everything and has brought about a

development of chemistry such as no other science has ever witnessed. It was largely on account of the marvelous achievements of organic and technical chemistry that so many of us came near forgetting that an inorganic chemistry still existed. The classification of the elements and their derivatives according to the imperfect systems of Newlands, Mendelejeff and Lothar Meyer was about the only thing that commanded a truely general interest.

This, however, has again changed. Mathematics and physics have once more fertilized inorganic research to a most remarkable extent. It is true, as van't Hoff states, that inorganic chemistry on account of its greater simplicity will probably always be first benefited by such stimulus from the more fundamental sciences. The scientist, however, who views chemistry broadly, rather than from any one particular point of view, is well aware that organic chemistry, physiological chemistry, etc., have been very quick indeed to apply the same physical principles that have assisted general inorganic chemistry.

To the list of newly discovered probable elements, coronium, monium, polonium etc. the nameless ones of Brush should be added. The discovery of polonium shows how some of the most recent physical discoveries are quickly used in other departments of science. These very elements, however, have emphasized the fact that ultimately the greatest and most universal interest centers not in the discovery of one or half a dozen new elements, neither in the successful synthesis of cane sugar or albumen, nor in the chemistry of aqueous or solid solutions, but in the question, the goal of all the relatively minor questions, what is matter and what relations do the various manifestations of matter, the elements and their derivatives, bear to fundamental matter. This philosophic problem is the "Gedankenfaden" which Greek philosophers began to spin and which the scientist with philosophic bent of mind will continue to spin throughout the ages.

E. K.

ESSENTIALS OF MATERIA MEDICA, THERAPEUTICS AND PRESCRIPTION WRITING, arranged in the form of questions and answers, prepared especially for students of medicine by Henry Morris, M. D. Fifth edition, revised and enlarged. W. B. Saunders, Philadelphia. 1898. $1.00 net.

In the fifth edition of this book, the author has brought it up to the last edition of the U. S. Pharmacopœia. The approved nomen-

clature of plants has been introduced according to the more recent views of systematists. The most important of the newer drugs, especially in the classes of antipyretics and hypnotics, have received attention and a number of those now no longer in use have been omitted.

A therapeutical classification is adopted which, in view of the purposes for which this work is intended, is doubtless as useful as any. The system as here worked out is not perfect, as the author himself is frank enough to state, but that it is as satisfactory as nearly all others that might be offered as a substitute may also be said.

The subject matter seems to be presented in a concise and accurate manner and by those who desire a synopsis of the most important facts in the subjects here treated, this work will doubtless find much use.

The value of the dialogue feature of the book seems to the writer questionable, a continuous statement seeming preferable to the catechism style here adopted. *Rodney H. True.*

GRAHAM-OTTO'S AUSFÜHRLICHES LEHRBUCH DER CHEMIE. Erster Band, dritte Abtheilung: Beziehungen zwischen physikalischen Eigenschaften und chemische Zusammensetzung der Körper. Herausgegeben von Dr. H. Landolt, Professor an der Universität Berlin. Zweite Hälfte, pp. 503—890. (Schluss des ersten Bandes.) Verlag von Friedrich Vieweg und Sohn, Braunschweig. 1898.

Book making is as much of a science as it is an art. To plan a complete treatise on chemistry requires good generalship in addition to a general survey of the field. Such a work as Berzelius' Lehrbuch der Chemie covering the entire field by a single author is an impossibility to-day. The extent to which specialization can be carried to advantage is demonstrated by the work before us. Graham's Elements of Chemistry grew into Graham Otto's Lehrbuch der Chemie. After two editions of this successful work it developed into what might be termed three distinct treatises:

1. Ausführliches Lehrbuch der physikalischen Chemie, von Buff, Kopp und Zamminer.
2. Ausführliches Lehrbuch der anorganischen Chemie, von Otto.
3. Ausführliches Lehrbuch der organischen Chemie, von Kolbe.

Since the publication of the first part by the above triumvirate in 1857, this first volume, as it is termed, has undergone further

subdivision, viz. into three parts, of which the second half of the third part has just been completed. This third part of volume one treats of the relation between physical properties and chemical composition in nine chapters by as many specialists:

1. Crystalline form, by Prof. Arzruni of Aachen.
2. The relation between volume and chemical constitution, by Prof. Horstmann of Heidelberg.
3. Internal friction, by Prof. Přibram of Czernowitz.

These chapters were issued in 1893 (See vol. 12, p. 24) as the first half, now followed by the second half containing the following chapters:

4. Melting point, by Dr. W. Markwald of Berlin.
5. Boiling point, by the same.
6. Refraction, by Dr. E. Rimbach of Berlin.
7. Spectra of simple and compound bodies, by Prof. G. Kruess of Munich and Dr. H. Kruess of Hamburg.
8. Optical rotation, by Prof. Landolt of Berlin.
9. Electromagnetic rotation, by Dr. O. Schoenrock of Berlin.

The several chapters are remarkable not only for the vast amount of detail, but also for the manner in which these details are handled. Both achievements are undoubtedly the result of specialization. Such division of labor has many advantages and permits besides complete mastery a complete presentation up to date. Incidentally attention may be called to the presence of Tchúgaeff's interesting results in the chapter on optical rotation. These must have been introduced almost at the last moment, for they were published only during the first part of this year.

That there are disadvantages connected with so extreme a division of labor becomes apparent from the fact that one of the authors had his manuscript ready in 1889 and died shortly thereafter. The chapter was not revised, but an appendix is supplied which brings it up to 1895 only. Other chapters were completed early in 1897 or the middle of the same year. Whereas parts one (See vol. 3, p. 164) and two (See vol. 3, p. 187) followed each other in rapid succession during 1885, part three has been slow in making its appearance. This was due to various obstacles, notable among which may be mentioned the fact that much material of several chapters had to be obtained experimentally. In spite of the differences as to the time of completion, the third part makes a very creditable "*finis*" of volume one of this standard chemical treatise. *E. K.*

MANUAL OF CHEMISTRY. A guide to lectures and laboratory work for beginners in chemistry. A text-book specially adapted for students of medicine, pharmacy and dentistry. By Dr. W. Simon. Sixth edition, thoroughly revised. One vol., pp. 536, with forty-six illustrations and eight colored plates, representing sixty-four chemical reactions. Lea Brothers & Co., Philadelphia. 1898. Cloth, $3.00.

The experiences of the author as Professor of Chemistry in the College of Physicians and Surgeons of Baltimore, in the Maryland College of Pharmacy, and in the Baltimore College of Dental Surgery have, no doubt, been such as to enable him to judge the needs of the students he has so successfully been teaching for many years. That he did not err is demonstrated by the adoption of his manual by numerous, especially medical colleges throughout the country. The fact that the book is not used by those schools of pharmacy which are an integral part of state universities and not merely affiliated with larger educational institutions, cannot be considered an objection. It was not written for such students, but for that large class of pharmaceutical, medical and dental students who devote but a rather limited time to the study of chemistry, especially to laboratory work in chemistry. Every chapter indicates that the needs of these students are constantly born in mind. The work is what it pretends to be: a guide to lectures and laboratory work for beginners. The sixth edition will, without question, continue the good work of its predecessors and we shall not be surprised to see a seventh edition become a necessity in a comparatively short time. The book is not only neatly gotten up, but paper and press work are very good. *E. K.*

THE MYSTERY AND ROMANCE OF ALCHEMY AND PHARMACY, by C. J. C. Thompson. One vol., pp. xv, 325. The Scientific Press. Limited. London. 1897.

As the title and the general appearance of the book indicate, the numerous essays collected under the above title are written in a popular style, and evidently not intended to be judged from the standpoint of critical scientific inquiry. They are full of detail and must be the product of voluminous reading, yet they are loosely written in an equal loose style. From the historic standpoint as well as that of literary and artistic finish the volume does not compare favorably with the essays of Peters collected under the title of Aus pharmaceutischer Vorzeit in Wort und Bild. However, Peters

does not attempt to cover so large a field as Thompson in his book. No doubt, the latter will be read with great interest not only by pharmacists, but by many other persons as well. The true student of pharmacy, however, would have been better satisfied if the scope of the work had been more limited and if greater care and attention had been bestowed upon a more limited field. The history of English pharmacy must be full of interesting chapters that have not yet been sufficiently explored.

Nevertheless we should be pleased to have the American pharmacist, who cannot read Peter's excellent collection of essays, read this book; because, like Hoefer's La chimie, enseignée par la biographie de ses fondateurs, it no doubt will create a desire for more and better information. If, in the absence of something better, it helps foster the historic spirit, we ought to be glad to overlook many of its shortcomings. Some of the chapters are: The early age of Greek and Roman pharmacy; Alchemy—the alchemists; Black magic; Superstition and its influence on medicine; Plant lore—drug charms—folk medicine; Pharmacy in the time of Queen Elizabeth; Alchemy and pharmacy in literature. Many of the facts pertaining to English history that are to be found in the host of details contained in these chapters will, no doubt, prove of value even to the careful student of pharmaceutical history. *E. K.*

Pharmaceutischer Kalender 1899. Mit Notizkalender zum täglichen Gebrauch nebst Hilfsmittel für die pharmaceutische Praxis. Herausgegeben von Dr. B. Fischer und G. Arends. In zwei Theilen. I. Theil: Kalendarium, Schreib- und Notizkalender, Hilfsmittel für die pharmazeutische Praxis. II. Theil: Pharmaceutisches Jahrbuch. 28. Jahrgang. Verlag von Julius Springer, Berlin. 1899.

The title page in some measure indicates the contents of this annual. Besides it has been reviewed so often in the pages of this journal that it is necessary only to call attention to its reappearance at this time. Much of the contents is on account of its very character stable with but slight modifications or none at all. The diary and the tables may serve as illustrations. The list of new remedies comes in for more changes and the list of pharmaceutical publications, aside from the journals, is of necessity entirely new. The Jahrbuch contains as principal new feature, a very timely article on Organotherapy and organotherapeutic remedies by one of the editors, which ought to prove very useful indeed. *E. K.*

SUPPLEMENT.

Scientific Organizations.

A University Pharmacy. — Inasmuch as the practical training of pharmaceutical students with university education has been found deficient in Hungary as well as in other parts of the Austro-Hungarian Empire, the proposition has been made to establish a university pharmacy as a clinic for pharmaceutical students. Opposition is now being raised against such an institution. If a concession is given to one corporation, a university, why should it not be given to others, such as hospitals or mutual insurance societies. Indeed, why not?

Abandonment of Subtropical Laboratory.—The Botanical Gazette announces that the Subtropical Laboratory at Eustis, Florida, under the direction of the Division of Vegetable Physiology and Pathology of the Department of Agriculture, has been abandoned as a station, and Messrs. Swingle and Webber should hereafter be addressed at Washington. The tropical work, however, will not be discontinued, but will be conducted hereafter from Washington as headquarters. A small garden tract and laboratory have been secured at Miami, Florida, where experiments can be conducted, and where work can be done with laboratory facilities whenever desired. It is expected to make a feature of introducing and testing varieties of tropical plants which can be grown successfully in the tropical and subtropical portions of the United States. Extensive experiments have been made in crossing and hybridizing the orange and other citrus fruits, pine-apples, quavas, etc., and the resulting hybrids will be cultivated in this garden. It will also serve as a tropical station for amelioration experiments in the modification of some of our native fruits.

Report of Br. Ph. Revision Committee.—The Pharmaceutical Journal, London, says: "The New Pharmacopœa may be expected next spring, as after the General Medical Council has expressed approval of the complete printed draft now before it, two or three months will probably be occupied in final revision, so as to ensure the correction of any minor errors that may remain. It was intended from the outset that the work should appear in 1898, and Dr. Attfield has kept well within his estimate of four years as the time required to produce the complete work. In regard to the imperial character of the work, every colony and dependency has done something in the matter, and we understand that, in addition to securing the recognition of substances likely to be used only locally, it will be found that the suggestions of those colonies and dependencies have had a marked influence on the body of the Pharmacopœia."

Dr. Senn's Gifts to the Newberry Library.—Dr. Nicholas Senn, has recently presented to the Newberry Library, Chicago, the library of the late Professor Du Bois Raymond, consisting of 4,000 volumes and 13,000 pamphlets, mostly on the subject of physiology. Dr. Senn had

previously presented to the same institution the library of Dr. Wilhelm B. Baum, of Göttingen, and many valuable works from his private collection, including the manuscripts of some sixty works from his own hand.

A leaflet issued by the trustees of the Newberry library at the time Dr. Senn's last gift was received gives the following interesting information regarding the medical collection:

"About twelve years since, the Chicago Public Library received a gift of three Medical Collections — those of The Chicago Medical Society, The Chicago Medical College, The Chicago Medical Association, and The Homeopathic Relief Association. This was the first united effort in Chicago to give to the general public a Medical Library, and The Medical Library Association of Chicago was organized to take special charge of its interests.

"Some progress was made in the collection of books, which werestored in an upper room of The Public Library, then located in the City Hall. In 1890, on the suggestion and at the request of prominent members of the medical faculty of our city, and with the approval of the Directors of The Public Library, the collection was transferred to The Newberry Library, whose trustees assumed the duties of providing and maintaining a Medical Department for the use of the public, and to meet the demands of the medical profession. From this nucleus, which consisted of about nine thousand volumes, and eight thousand pamphlets and unbound serials, the Medical Department has increased to its present proportions of over thirty thousand volumes and twenty-two thousand pamphlets, and over four hundred carefully selected periodicals in every department of medical science, which are promptly placed on our shelves ready for immediate use. The department to-day, as a practical medical reference library, stands on a par with the largest medical libraries of New York and Philadelphia.

Botanical Gardens in Jamaica. — At this time when the plans for the establishment of a tropical botanical garden by American and English botanists are being perfected, an article in the November number of the Botanical Gazette by Mr. William Fawcett on The Public gardens and plantations of Jamaica will be of special interest to American readers since it is well nigh decided to locate the proposed garden upon this island.

From Mr. Fawcett's paper we learn that a botanical garden was established on the island about the middle of the eighteenth century, near Kingston. This garden was later known as the Liguarrea garden. It passed into the possession of the government about 1790 and was abandoned and sold in 1810. A second garden was founded at Bath in 1779. This one, originally of one and three quarters acres, was increased in 1829 by the addition of three acres. In 1860 money was appropriated for the purchase of another site at Castleton and two years later the formation of a garden was begun. At this time it was intended that the garden should be maintained for the production of seeds and plants for general distribution, but in 1866 it was abandoned as a garden. It is still maintained by the government

as an arboretum. In 1861 an experiment in Cinchona growing was made; a large number of seedlings being planted in different parts of the Blue Mountains, and in 1868 the cinchona plantations were started, forty acres being planted that year. This plantation is now known as the Hill Garden. The next year, 1869, a small plantation of Assam tea was put out. Fifteen or sixteen years later a garden especially adapted to the growing of canes and other plants requiring much moisture was begun. This is the Hope Garden. At about the same time the Parade Garden was established at Kingston. It contains about seven acres and is maintained chiefly as a pleasure ground. The grounds about the governors residence at Kingston, nearly two hundred acres in extent, are under the care of the Department of Public Gardens and are known as the King's House Garden.

As early as 1775 the care of the gardens and plantations was placed in the hands of an island botanist, who was also to investigate the native flora of the island with special attention to medicinal and other useful plants. In 1879 the gardens and plantations were constituted a department in the island government.

As a result of the establishment and maintenance of the gardens large numbers of useful and ornamental plants have been introduced and established in the island, many of these having become the common garden vegetables of the natives. Among the more important introductions are three species of *Cinchona: C. succirubra*, *C. nitida*, and *C. micrantha*.

PROCEEDINGS RECEIVED:—

New York Pharm. Assn.—Proceedings of the nineteenth annual meeting held at Manhattan Beach.

Wisconsin Pharm. Assn.—Proceedings of the seventeenth annual meeting held at Green Bay.

In Memoriam.

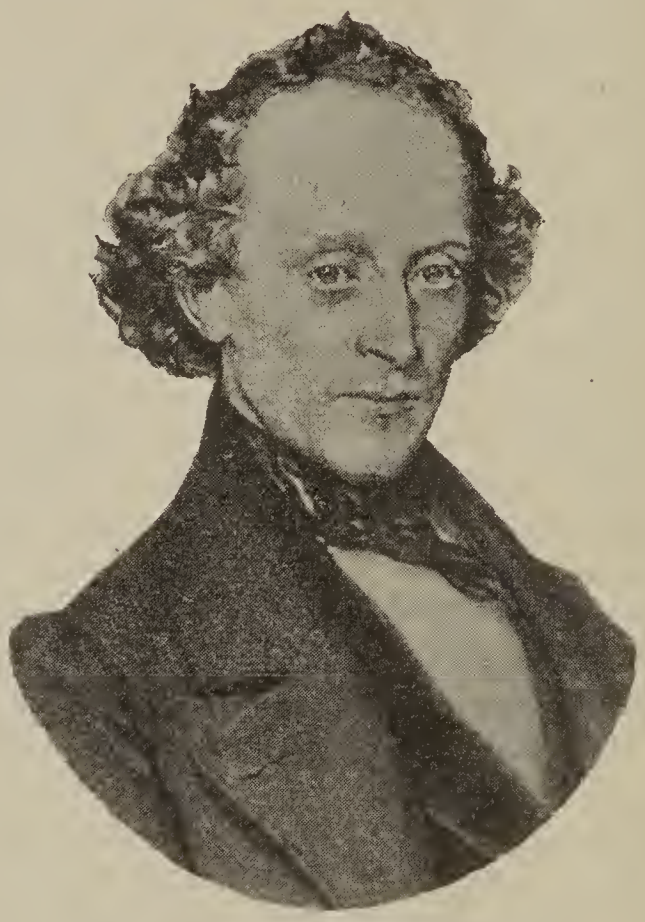
Fr. R. v. Schneider.—A prominent representative of Austrian pharmacy died November 29, 1897 in the person of Dr. Franz Coestellin R. v. Schneider at the age of eighty-four. He was born Sept. 28, 1813, in Krembs, Lower Austria. Having for a time pursued historical and ethnographic studies, he took up the study of medicine in 1838 and took his doctor's degree in medicine at the University of Vienna in 1841. As a student he had acquired a taste for chemical studies. In consequence he gave up his career as a physician in 1846. After having occupied various subordinate positions in Vienna and Prague, he became professor in 1852. In this capacity he held positions in several military institutions until 1871 when he became Professor of Chemistry and Director of the First Chemical Laboratory at the University of Vienna. For several years he lectured on pharmaceutical chemistry as well as general chemistry. It was, however, in his capacity as Director of the Sanitary Department of the Ministry of Interior for twelve years, until 1888, that Schneider came most closely in contact with Austrian pharmacy. Important pharmaceutical regulations were passed under his direction, also a new revised edition of the Austrian Pharmacopœia was published. He was also sole

editor or coeditor of commentaries to the fifth, sixth and seventh editions of the Austrian Pharmacopœia. Besides this he has written several treatises on chemistry and numerous articles on chemical and related subjects.

History.

Superstitions Regarding Salt.*—Salt has always been prominent in popular superstitions from the earliest known times. It played a part in the Roman religious observances, and among the eastern natives was especially a symbol of friendship. The Mexicans had a goddess of salt, Huixtocilmatl. The Chinese also use salt in their observances preparatory to the new year. In the mountain regions of North Carolina and West Virginia the inhabitants are said to put salt on their shoes to keep off witches.

The prominence of salt as a religious and social symbol is doubtless due to the fact that it became a necessity to most nations at an early stage of civilization, and that it was a luxury very hard for primitive man to obtain in many parts of the world. There are still, even in this era of commerce, portions of central Africa where the use of this mineral is a luxury confined to the rich. In ancient times and among inland peoples the possession of a salt spring was regarded as a special gift of the gods. The Chaonians in Epirus had one which flowed into a stream where there were no fish, and the legend was that Heracles had allowed their fore-fathers to have salt instead of fish. The Germans waged war for the possession of saline springs, and believed that the pre-



Fr. R. v. Schneider.

* Pop. Sc. Mo., 12, p. 247.

sence of salt in the soil invested the district with peculiar sanctity, and made it a place were prayers were most readily heard. That religious significance should come to be attached to a substance so highly prized, and in many cases so hard to obtain, seems but natural, especially as the habitual use of the mineral commenced with the advance from nomadic to agricultural life—that step in civilization that is said to most influence the cults of the nations. So important was salt to the ancients that it has been conjectured that the oldest trade routes were created for traffic in the article.

Bibliography.

The third edition of the Pharmakognostische Tabellen by the Apothecary C. Stephan of Dresden can be had through the firm of Julius Springer.

The Baltimore Pharmacologist is reported as a new drug journal. It is to be "a monthly journal of materia medica and pharmaceutics, ambitious to link pharmacy and medicine." The editors are H. P. Hynson and J. W. Westcott.

Pharmacists who indulge in the study of natural history as a pastime and who collect biological objects will find the descriptive catalogues of the Kny-Scherer Co. very suggestive. Those who collect not only for pastime, but also for profit may find it of advantage to correspond with Dr. Lagai of the same firm.

It is reported that a collection of medical prescriptions for diseases of the eye, in the handwriting of Michelangelo, has been discovered in the archives of the Vatican. He is said to have been much troubled with his eyes in old age, and he seems to have made a record of all remedies which were prescribed for him or possibly recommended to him.

Appletons' Popular Science Monthly for January will contain an instructive article on Science and Morals by the eminent French chemist, M. P. E. Berthelot. M. Berthelot contends that morals have grown out of science, and that, instead of their being based on religion, the latter is really the outgrowth of an ethical theory built up unconsciously from scientific data.

Professors Sadtler and Trimble are revising their Pharmaceutical and medical chemistry. The work is not only to be brought up to date, but will be in part rewritten, adapting certain chapters more to the need of pharmaceutical students. The number of good text- or reference books on pharmaceutical chemistry written in the English language is none too great. Those interested in the subject will, therefore, welcome improvements in this direction.

The well known book firm of Lemcke and Buechner celebrates its fiftieth anniversary this year. From 1848 to 1895 the name of the firm was Westermann & Co. Mr. Lemcke entered the firm in 1869, then composed of B. Westermann and Augustus Buechner, the father of Mr. O. Buechner. The firm prides itself of having had and still having pleasant relations with many of the more prominent scientists and literary men of this country.

Volume II of the second series of the Index-Catalogue of the Library of the Surgeon General's Office,

which carries the vocabulary from B to Bywater, is out and is reported to show that under Deputy Surgeon-General Huntington's direction the same care is taken in the preparation of the volumes of the new series of this important publication as was shown in that of the preceding series. This library does not only contain medical works, but such pertaining to the general sciences and to pharmacy as well.

Pharmacists who have read the stories of "Frau Buchholz," will be interested to know that the author, Dr. Julius Stinde, served as an apothecary's apprentice for several years. In an interesting autobiographical sketch in Vellhagen & Klasing's Monatshefte he tells us how he liked the natural sciences more than the Greeks and Romans and became an apothecary's apprentice, also that for the sake of his health he had to leave his first choice and how he came back to his books. He also relates how he came to adopt the pseudonym of Wilhelmine Buchholz, the name of a somewhat famous Hamburg washer woman. This he did in connection with his treatise on Water and Soap, which he wrote at the request of his publishers.

Very few firms get out commercial reports in their respective fields that equal in scientific value the semi-annual reports of Schimmel & Co. of Leipzig. They not only give a good resumé of the commercial and of late years also of the scientific progress made in their respective branch, but they also contain a liberal amount of chemical research work of their own chemists and of economic investigations of members of the firm. Since October, 1890, these reports are also published in the English language and since October, 1896, in the French language. The three French numbers published thus far have come to our notice recently and it is therefore that we take occasion to call attention to the international character of these reports at this time.

For the thirteenth year the Columbia pad calendar has made its appearance in due season for use in 1898. It is, no doubt, a welcome adjunct on every busy man's desk. A fair amount of space is left on every leaflet to permit of its use as a memorandum. The American Book Company has also sent out its School Calendar, which supplements the former by being a wall calendar, and which in addition to the monthly sheets contain a complete calendar for the years 1898 and 1899. Another wall calendar with a tricolor process illustration is distributed by the Germania Publ. Co., principally to the readers of its paper. The illustration represents Hermann returning from his victory over the Romans in the Teutoburg Forest.

Catalogues Received:—

Paul Klingksieck—Paris. Ouvrages de botanique pouvenant en majeure partie des bibliothèques de feu M.M. Brochon et Clavaud.

Lemcke & Buechner—New York. Monthly Bulletin of world-literature, Supplement, No. 10—12.

Speyer & Peters—Berlin. 4. Katalog des antiq. Lagers: Zeitschriften, Encyclopædien und Sammelwerke auf dem Gebiete der Medizin.

H. Welter — Paris. Catalogue No. 88: Historique naturelle générale.

John Wiley & Sons — New York. Scientific Text-Books and Industrial Works; Part VI., Chemistry, Electricity, Pharmacy, Physics, etc. 1898.

Commercial.

A drug specification sheet. — A document of no little interest are the specification sheets issued for bids upon hospital supplies for the Department of Public Charities of the City of New York, Boroughs of Manhattan and The Bronx, for 1898. As many as 714 items are included in the list varying in quantity all the way from ½ oz. apomorphine hydrochlorate or 2 oz. of siphylinum, a homeopathic preparation, to 5,000 lbs. of castile soap, or 35,000 pills of quinine sulphate, or 40,000 triturate tablets of 1/10 gr. calomel. Those physicians who are so strongly opposed to the introduction of patented chemicals into the pharmacopœias had better reflect over such items as 800 oz. phenacetine Bayer, 250 oz. sulfonal, 350 oz. trional and others contained in the list. These quantities are supposed to be sufficient for six months' use on the part of the "unethical" and "unAmerican" physicians of the Department of Public Charities of a single city in this country.

Reports and Pamphlets received:—

American Trade Press Ass'n.* Presidential address of E. C. Brown, delivered at the seventh annual meeting. Leaflet, pp. 6.

* C. H. E. Redding, Sec'y., 127 Duane St., N. Y. City.

Fries Bros. — New York. Formaldehyde. Trillat system of disinfecting with vapors of formochloral. Pamphlet, pp. 19.

Fritzsche Bros.—New York. Bulletin semestriel de Schimmel & Cie.
Octobre | Novembre, 1896. Brochure, pp. 153.
Avril | Mai, 1897. Brochure, pp. 70.
Octobre, 1897. Brochure, pp. 89.

Lehn & Fink—New York. Chloralamid Schering, the new hypnotic, discovered by Dr. J. von Mering of Strassburg. Pamphlet, pp. 52.

Schering & Glatz — New York. Schering's formalin disinfecting and deodorizing lamp and Schering's disinfector. Pamphlet, pp. 32.

Price-lists received:—

G. & R. Fritz—Vienna. Vorzugs-Preise. Mitte November, 1897. Pamphlet, pp. 76.

Kny-Scherer Co.—New York. Descriptive Catalogue No. 1: Naturalists' supplies. Pamphlet, pp. 40.

—Descriptive Catalogue No. 2: Anatomical Models. Pamphlet, pp. 43.

—Descriptive Catalogue No. 3: Osteological preparations. Pamphlet, pp. 31.

—Descriptive Catalogue No. 4: Laboratory supplies. Pamphlet, pp. 32.

—Descriptive Catalogue No. 5: Biological preparations. Pamphlet, pp. 21.

Roessler & Hasslacher Chem. Co.—New York. Monthly price-list, December, 1897.

The following new Books

may be secured from the

Geo. Brumder Book-Dept., Milwaukee, Wis.

H. C. MAERCKER, MANAGER.

Annalen det Physik und Chemie. Begründet von J. C. Poggendorff. 12 Hefte pro Jahr	$ 9.00
Arnold. Repetitorium der Chemie	2.00
Aulde. Pocket Pharmacy	2.00
Autenrieth. Qualitative chemische Analyse	1.20
Autenricth. Kurze Anleitung zur Auffindung der Gifte und stark wirkender Arzneistoffe	1.00
Bakody. Scientific medicine in its relation to homeopathist	50
Bartholow. Practical treatise on materia medica and therapeutics. 8th ed. rev. and enl	5.00
Beasley. Book of Prescriptions: cont. upward of 3,000 prescriptions. Compendious history of materia medica. 7th ed	2.25
Beilstein. Organische Chemie. Neueste Aufl. 2 Bde	40.00
Berichte der deutschen Pharmazeutischen Gesellschaft. Pro Jahrgang 12 Hefte	3.25
Bersch. Handbuch der Mass-Analyse. Umfassend das gesammte Gebiet der Titrirmethode. gb	2.75
Brestowski. Die neueren und neuesten Arzneimittel	2.75
Brexton. Anaesthetics: their uses und administration	1.50
Caspari. Textbook on pharmacy	4.50
Cloetta-Filehne. Lehrbuch der Arzneimittellehre und Arzneiverordnungslehre	2.50
Curtis. Manual of general medical technology; incl. presciption-writing. 3d ed	1.00
Dieterich. Neues pharmazeutisches Manual. 7. Aufl. 1897	6.50
Elsner. Praxis des Chemikers	5.00
Ewald. Handbuch der allgem. und speziellen Arzneiverordnungslehre	7.50
Fischer. Lehrbuch der Chemie für Pharmazeuten	6.00
Flückiger. Grundriss der Pharmakognosie	2.75
Fluckiger. Reactions: sel. of organic chemical preparations important to pharmacy. New rev. enl. ed.	2.00
Gray. Pharmaceutical quiz compend. 12th ed	1.50
— — Prescriptionist. New rev. ed	1.50
Harrops. Monograph of formulas for the preparation of flavoring extracts	2.00
Herzfeld, Beer & Matzdorff. Repetitorium für Chemie, Physik, Pharmakognosie und Botanik	2.00
Hewitt. Anaesthetics und their administration	3.25
Husemann. Handbuch der Arzneimittellehre	3.50
Jahresbericht der Pharmacie, hrsgb. vom deutschen Apothekerverein. 30. Jahrg. 1895	7.50
Jarrow. Der Erwerbsbegründer in den ertragreichsten modernen Spezialitäten für Pharmazeuten	1.75
Krafft. Kurzes Lehrbuch der Chemie. Organische Chemie	6.00
Martin, Human body and the effect of narcotic drugs	22.00
Mason. How to become registered	50
Matthews. Syllabus of lectures on pharmacology and therapeutics	1.50
Meyer. Anleitung zur quantitativen Bestimmung der organischen Atomgruppen	1.00
Miller & Kiliani. Kurzes Lehrbuch der analytischen Chemie	3.50
Mevius Discovery of modern anaesthesia: by whom was it made?	1.00
Oldberg. Pharmaceutical & chemical problems and exercises in metrology	1.75
Oppenheimer. Grundriss der Chemie. I. Theil. Anorganische Chemie. gb	1.30
Otto. Anleitung zur Ausmittelung der Gifte. 7. Aufl. 1896	3.00
Potter. Handbook of materia medica, pharmacy und therapeutics. 4th ed	4.00
Reichs-Chemiker-Kalender f. d. J. 1897. Hrsg. von Dr. Karl Hoffmann	1.50
Remington. Practice of Pharmacy. 3d rev. ed	6.00
Remsen. Einleitung in das Studium der Kohlenstoffverbindungen oder organische Chemie	2.00
Richter. Lehrbuch der anorganischen Chemie. Neueste Aufl. 1897	3.50

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SUPPLEMENT.

Universities and Colleges.

New York Botanical Garden. — Attention was called to the general plan of this garden on p. 15 (S) of vol. 14 of this journal. It is now reported (Science) that ground was formally broken for the museum building on December 31. The contract for the construction and equipment of the museum building, powerhouse, and minor buildings has been awarded for $347,019. The plans for the great range of horticultural houses have also been completed. During the past season about 2900 species of plants have been obtained, together with large quantities of museum, library, and herbarium material.

New York College of Pharmacy. At the regular meeting of the college held Tuesday evening, January 18, at which 156 persons were present, the subject of vanilla was discussed in all its aspects. The subject was introduced by Professor Rusby, who gave a general account of the distribution and habits of vanilla plants, their cultivation and the curing of vanilla. He illustrated his address by dried specimens of vanilla plants, by lantern-slides showing the different stages of curing, the structure of the flowers and the methods of artificial pollination, and by vanilla fruits. Professor Jelliffe followed, giving an account of the microscopical characters of vanilla and of the moulds found upon the first. This was illustrated by microscopical exhibits and by cultures of the moulds. Then Professor Coblents gave a resumé of the chemistry of vanillin, calling attention to the different processes by which it is prepared synthetically. Mr. Adolph Henning discussed the commercial aspects of the subject, exhibiting some fifteen very handsome specimens of vanilla beans, representing every variety found in the New York market. Mr. O. Kalish concluded the subject with a discussion on the preparation of vanilla extracts for flavoring purposes. This way of treating a subject at a pharmaceutical meeting is an excellent one and deserves imitation.

Notes.

The attendance at the German universities during the present winter semester is reported to be as follows: —Berlin 5935, Bonn 1671, Breslau 1513, Erlangen 1068, Freiburg 1073, Giessen 674, Goettingen 1154, Greifswald 756, Halle 1606, Heidelberg 1084, Jena 632, Kiel 580, Koenigsberg 684, Leipzig 3277, Marburg 908, Muenchen 3817, Muenster 526, Rostock 451, Strassburg 1066, Tuebingen 1226, Wuerzburg 1425.

Professor Koch, who for some time has been in German East Africa investigating the "Rinderpest," has been invited by the Indian government to come once more to India to study the plague. He had to decline, however, inasmuch as his duties in Africa will keep him there probably another year.

The extraordinary expenses of Prussian universities for 1898 are estimated in the Prussian budget at 6 million marks against 2¼ million marks during 1897.

At the January meeting of the Council of the British Pharmaceutical Society, President Hills stated (see Pharm. Journ. p. 51) that "he hoped the time was coming when there would be an enforced curriculum, and also when there would be some system whereby there should be some relationship between the teaching universities throughout the country and pharmacy."

On retiring from the rectorship of the University of Vienna, October 28, 1897, the distinguished Oriental scholar, Prof. Leo Reinisch, delivered an address, in which he expressed his warm approval of the enlightened policy of that institution in admitting students to its privileges without distinction of sex. He stated that under the present social and industrial conditions young women of the better class, but of moderate means, can be saved from physical, intellectual and moral deterioration only by having full scope for the development of their mental powers.

German pharmacists may well take heed of these words as well as of those spoken a month earlier by an Austrian apothecary, Dr. Jan Rucker, who called attention to the fact that all the lengthy discussions about the natural aptitude and function of woman could not hold out against criticism and it soon became evident that all of this opposition was based on naked egotism and a fear of competition that bordered on insanity.

Mr. Frances Ramaley, Instructor in Pharmaceutical Botany in the University of Minnesota, has been appointed Assistant Professor of Botany in the University of Colorado, Boulder, Colo.

Scientific Societies.

American Chemical Society. — According to reports in the Era this society held a very profitable and pleasant meeting at Washington, December 29 and 30. At several sessions papers were read and a liberal share of time seems to have been given to sight-seeing in the government buildings and elsewhere. Besides nearly every one of the seventy-five members of the Washington section, more than fifty visiting chemists attended the various sessions. On the Dignity of Analytical work, was the subject of the retiring President, Dr. Chas. B. Dudley, Director of the laboratory of the Pennsylvania Railroad Company at Altoona, Pa.

Secretary Hale reported that the rapidly increasing membership of the society had passed the 1,150 mark. There are now ten local sections: 1. Rhode Island, with headquarters at Providence, 2. Cincinnati, 3. New York, all three chartered in 1891; 4. Washington, 5. Lehigh Valley, the latter having headquarters at Bethlehem, both chartered in 1893; 6. New Orleans, chartered in 1894; 7. Nebraska, with headquarters at Lincoln, 8. Chicago, both chartered in 1895; 9. North Carolina, with headquarters at Raleigh, chartered in 1896; and 10. Columbus, O., chartered in 1897.

The officers for the ensuing year are given as follows: President, Chas. E. Munwe, Washington, D. C.; Secy., Albert C. Hale, Brooklyn, N. Y.; Treas., Chas. F. McKenna, New York City; F. E. Dodge, Flushing, N. Y.; Councilors, F. W. Clarke, Washington, D. C.; A. A. Noyes, Boston, Mass.; G. F. Baker, Phila.,

Pa. and W. S. Dudley, Nashville, Tenn.; Directors, A. B. Prescott, Ann Arbor, Mich.; Chas. F. Chandler, New York City and Chas. B. Dudley, Altoona, Pa.

Scientific Societies at Ithaca.*—The sixteenth annual meeting of the American Society of Naturalists and Affiliated Societies was held from Dec. 28.—30. at Ithaca in the Buildings of Cornell University.

The following societies were represented:

American Society of Naturalists, Secy. H. C. Bumpus, Brown University.

American Physiological Society, Secy. F. S. Lee, Columbia University.

American Morphological Society, Secy. Geo. H. Parker, Cambridge.

American Psychological Association, Secy. Livingston Farrand, Columbia University.

Association of American Anatomists, Secy. D. S. Lamb, Washington, D. C.

Association for Botanical Morphology and Physiology, Secy. W. F. Ganong, Smith College.

Section H., Anthropology of the American Association for the Advancement of Science, Secy. W. J. McGee, Washington.

The last two are new societies which have just been organized. The members in attendance were something over 150 and represented nearly 50 different institutions. The programs of all the societies were full and required from two to three days for their transactions. The papers were eminently scientific and represented some of the very best work being done in this country.

President Schurman, of Cornell University, made an appropriate address of welcome to the societies on Dec. 28., at one o'clock in the botanical lecture room at Sage College. He also held a reception on the evening of the same day to the members, which was well attended and appreciated. The annual dinner of the societies was held at the Cascadilla dining rooms on Wednesday evening. Prof. Osborn of Columbia University presided by reason of the absence of President Whitman of Chicago University.

At the meeting of the American Society of Naturalists on Dec. 29., the discussion of The biological problems of to-day attracted the attention of the members of all of the societies. A number of speakers discussed the problems before us to-day in a rather brief way as each one was limited to 10 minutes. The following are the subjects and the names of those who disscussed them:

Palæontology. By H. F. Osborn, Columbia University.

Botany. By Wm. Trelease, Missouri Botanical Gardens.

Anatomy. By Burt G. Wilder, Cornell University.

Psychology. By J. McKeen Cattell, Columbia University.

Physiology. By Jacques Loeb, University of Chicago.

Developmental Mechanics. By T. H. Morgan, Bryn Mawr College.

Morphogenesis. By Chas. B. Davenport, Harvard University.

Under new business it was moved that the members of the Society express their sentiments to the Presi dent and Congress of the United

* The Review is indebted to Prof. Henry Kraemer, who attended the meetings of the Am. Soc. of Nat., for this account.

States that the Commissioner of Fish and Fisheries should according to the law of 1888 be "a person of scientific and practical acquaintance with the fish and fisheries of the coast." This was carried unanimously and Prof. Osborne was delegated to convey the sentiments of the Society to the President.

It was stated, by Prof. Morgan, that the "American tables" at the zoological Station of Naples were inadequate to the needs of American students abroad and that were it not for the generosity of Prof. Dohrm many Americans could not avail themselves of the privileges of the station.

The Society moved that 100 dollars be appropriated for the securing of another American table. Prof. Osborne stated that a friend of Columbia University would give 250 dollars toward the same end.

The Society further appropriated 50 dollars to continue the "Naturalists Table" at Woods Hall. The amendment to the constitution providing for the extension of the territory on which the society might meet, was discussed but lost.

The following officers were elected for the ensuing year:

President, H. P. Bowditch, Harvard Medical School.

Vice-Presidents, Wm. James, Harvard University, Simon H. Gage, Cornell University, H. S. Williams, Yale University.

Secretary, H. C. Bumpus, Brown University.

Treasurer, John B. Smith, Rutger's College.

Executive Committee, J. P. McMurrich, University of Michigan, E. G. Conklin, University of Pennsylvania.

Bibliography.

Das Notizblatt des königl. botanischen Gartens und Museums zu Berlin, No. 11. Vol. II, Dec. 29, 1897 is at hand. Interesting articles on maté and other foreign economic plants occupy a large part of this number. Publisher, Wilhelm Engelmann, Leipzig. Price, 1 Mark.

According to the French correspondent of the C. & D. a circulating library of medical and pharmaceutical books has been opened by a publisher in the students' quarter of Paris. The terms are $1.00 per month and a subscriber can have what books he requires and keep them any length of time.

Wilhelm Engelmann of Leipzig announces as just completed the first volume of the second edition of Pflanzenphysiologie, ein Handbuch der Lehre von Stoffwechsel und Kraftwechsel in der Pflanze, by the well known plant physiologist Prof. W. Pfeffer of the University at Leipzig. The second volume is in the course of preparation.

Hunt, the Owler, a sketch by Stanley J. Weyman, published in the Christmas number of the London Graphic, is interesting because one of the characters—as usual, the villain—is an apothecary. The story deals with a political intrigue at the time of William the Third, and the apothecary is presented entirely from the political, and not at all from the business or scientific side.

The Bulletin of Pharmacy makes a very liberal prize offer not only to its subscribers but to others as well. Beginning with the March number, a prize of twenty-five dollars will be offered for the best original article on topics mentioned in the

January number of the Journal. Those who fail in securing a prize may, if their papers are deserving, receive other compensation. For details, those who desire to enter the competition should address the editor, Box 484, Detroit, Mich.

The Bulletin de la Société Géographique contains a description of a tour in Cyprus made for the purpose of observing the traces of the French colonists who followed the crusaders. "Incidentally," remarks The Nation, "the author, M. C. Eulart, praises the British rule as a model of administration, and refers especially to the efforts being made to reforest certain districts, by prohibiting the pasturage of goats and the planting of the eucalyptus."

The Annales de Géographie contains among others an article on the little known district of Cao Bang, on the northeastern frontier of Tonkin, which is apparently rich in undeveloped resources. The soil is capable of yielding all tropical products; valuable trees (as the paper mulberry), bamboo, and aromatic plants grow in great profusion. The district is traversed by three great trade routes, leading to important Chinese cities.

Professor Henry Lincoln Clapp will have an interesting illustrated article on School gardens in Appletons' Popular Science Monthly for February. In city public schools where nature study has been introduced, obtaining the necessary supply of plants is always difficult. The idea of having gardens cared for by the pupils, in which the desired specimens are always at hand, has been attended with considerable success abroad, and the same arrangement is urged for our adoption.

The Verlag von Johann Ambrosius Barth announces the completion of Die chemische und mikroskopische Untersuchung des Harnes, a handbook for the use of physicians, apothecaries, chemists and students, by Dr. Eduard Spaeth; also of the sixth edition of Plattner's Probirkunst mit dem Loethrohre, a complete guide for the qualitative and quantitative examination with the blowpipe. This edition has been edited by Dr. Fr. Kolbeck, professor at the mining academy in Freiburg.

Extra Bulletin of the Coloniaal Museum at Haarlem. Part 4, by Dr. M. Greshoff, assisted by Dr. J. G. Boerlage, dealing with the economic plants of India, contains monographic accounts accompanied by large illustrative plates dealing with the following plants: *Ricinus communis* L., *Santalum album* L., *Coix Lachryma Jobi* L., *Acacia Farnesiana* Willd., *Bonea macrophylla* Griff., *Calotropis gigantea* Br., *Piper Cubeba* L. f., *Nyctanthes Arbor-tristis* L., *Morinda citrifolia* L. and *Gonostylus Miquelianus* Teysm. and Binnend. Published by J. H. de Bussy. Amsterdam, 1897.

Dr. George M. Gould and Dr. Walter M. Pyle contribute to the December number of the Bulletin of the Johns Hopkins Hospital an extended article on King Arthur's medicine. A minute discussion is given of wounds and diseases probably referred to in Mallory and other old romancers and chroniclers. A few observations regarding remedies are of special interest to the pharmacist. The authors do not confine themselves to matters of medicine, but discuss the morality and other

characteristics of our ancestors in a way that sometimes gives the appearance of special pleading. For this reason the article seems less valuable than most of the interesting historical discussions in the same journal.

The following note from the Botanical Gazette no doubt expresses the sentiments of others as well as that of the editors of that journal: "We note with regret that with the number (Dec. 29.) which completes its tenth volume Garden and Forest suspends publication. The following statement is made: 'For ten years the experiment has been tried of publishing a weekly journal devoted to horticulture and forestry, absolutely free from all trade influences, and as good as it has been possible for us to make it. This experiment, which has cost a large amount of time and money, has shown conclusively that there are not persons enough in the United States interested in the subjects which have been presented in the columns of Garden and Forest to make a journal of its class and character self-supporting. It is useless to expend more time and money on a publication which cannot be made financially successful and must therefore sooner or later cease to exist.' This comes as a surprise to many botanists who had come to regard this as one of their most valued journals."

The Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, sowie der Gebrauchsgegenstände, is a new monthly published by Julius Springer of Berlin,. that will hereafter take place of a quarterly, viz. the Vierteljahresschrift über die Fortschritte auf dem Gebiete der Chemie der Nahrungs- und Genussmittel etc., which was begun in 1886 and of a monthly, viz. the Forschungsberichte über Lebensmittel und ihre Beziehung zur Hygiene, über forense Chemie und Pharmacognosie, which was begun in 1894. Dr. A. Hilger who was editor of both quarterly and monthly will continue as one of the editors of the new journal. Dr. v. Buchka of Berlin and Dr. Koenig of Muenster i. W. will be his associates. The new journal will cover the scope of both of its predecessors and will contain original articles, abstracts, reports of new publications, of societies and laws which are of value to the "Nahrungsmittelchemiker" or analysts engaged in related fields of work. It is also the intention of both editors and publisher to make the new journal of value to physicians and pharmacists who are connected with sanitary boards. The price of the new journal is only twenty marks.

An announcement concerning the Pharmaceutical Archives was made in the January number of this journal. As the only journal in the English language devoted strictly to pharmaceutical science it certainly merits our attention. The first number, which appeared during the past month, contains an article by Professor J. O. Schlotterbeck and Mr. A. Van Zwaluwenburg both of the University of Michigan, entitled On the comparative structure of the leaves of Datura Stramonium, Atropa Belladonna and Hyoscyamus Niger. The article by R. H. Denniston on The structure of twigs of Fraxinus Americana L. constitutes number two of the Contributions from the pharmacognostical laboratory of the Univer-

sity of Wisconsin under the direction of Professor R. H. True. Dr. Theodor Peckolt of Rio de Janeiro, who for a number of years has been a liberal contributor to the Review, and who on account of his contributions on Brazilian medicinal plants has been made an honorary member of the German Pharmaceutical Society, contributes the first of a series on the Volksbenennungen der brasilianischen Pflanzen und Producte derselben in brasilianischer (portugiesischer) und der von der Tupisprache adoptirten Namen. This alphabetical list will be of great importance to pharmacognosists. The last article is a continuation of the Chemical bibliography of morphine from 1875 to 1896, prepared by Mr. H. E. Brown under the supervision of Professor Prescott of the University of Michigan. The first two articles are each accompanied by two plates.

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—Nouveaux ouvrages d'histoire naturelle. Janvier, 1898.

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A. S. Clark — New York. Catalogue No. 45.

Gustav Fock — Leipzig. Lagerverzeichniss No. 143.

Lemcke & Buechner—New York. Monthly bulletin of world-literature, 1897, Nos. 11 & 12.

Pharm. Review Publ. Co. — Bulletin of pharmaceutical literature, 1898, No. 1.

B. G. Teubner—Leipzig. Mittheilungen. 30. Jahrgang, Nr. 5|6.

Commercial.

Cultivation of Wormwood. — Prince W. J. Massalsky reported before the Geographical Society on Dec. 5, on the manufacture of santonin in Turkestan.

Santonin, as is well known, is obtained from a species of wormwood, *Artemisia cina*, the so-called wormseed.

This costly plant, which not long ago was spread over many parts of Asia and Africa, is now everywhere exterminated except in Turkestan, where great areas of it are still to be found in the Pschimkentschen and Aulicatinschen regions, on both sides of the river Syr Darjo, at the point where it receives the waters of the Arissa.

The seeds are gathered by the Kurds, from whom the Tartar dealers buy them for from 5 to 6 kopecks per pud and dispose of them for from 30 to 35 kopecks per pud.

Part of the seed, about 150,000 (puds) comes into the market as wormseed, but the greater part is used for the manufacture of santonin.

In Pschimbent (Sawinkow), a large factory which handles about 100,000 puds of seed has been built for obtaining the latter.

Recently there has been a falling off of the number of plants grown in Turkestan, a circumstance attributed to various causes.

Massalsky therefore regards it as very necessary to take steps for the protection of this plant in Turkestan, the only place where it is still produced, since it is of importance not only to this state but to the whole world.

A Failure in Co-operation. — The Medizinische Waarenhaus or

Medical Supply Company of Berlin is reported to have been operated with a loss of over 56,000 Marks, even after the stock had been reduced to one half of the originally paid up 250,000 Marks. It is a stock company of physicians who had organized with the hope of securing their medical supplies cheaper by co-operation. The Südd. Apotheker-Ztg. calls attention to this deficit by way of warning to those apothecaries who have favored central laboratories during the past year. The Apt. Ztg., the organ of the German Apothecaries Society, however, is of the opinion that the failure of the medical co-operation enterprise is not necessarily a reason why pharmaceutical co-operation along quite different lines is doomed to prove a failure.

A Lesson in Economy.

A striking instance showing how little we have learned of the l sson of economy is reported by the Pharm. Journ. The dry distillation of acetic acid, wood naphtha (methyl alcohol) and tar from saw dust is one of the latest enterprises in Norway. A factory has been started at Frederikstad capable of distilling 10,000 tons of sawdust during the year, and also of manufacturing charcoal briquettes, which are exported to the Netherlands. The acids are chiefly placed on the German market, while the tar is mostly consumed at home. The factory is said to be the first of its kind erected in the country.

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E. R. Squibb & Sons—Brooklyn. Semi-annual price list, No. 79, 1898.

—Pricelist No. 12, Jan., 1898.

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Lehn & Fink—New York. A phase of the treatment of goutiness. By Dr. Reynold W. Wilcox. Reprint from the Medical News. Pamphlet, pp. 15.

Parke, Davis & Co.—Detroit. The Lofoten Islands and their principal products. Illustrated pamphlet, pp. 39.

SUPPLEMENT.

Universities and Colleges.

Notes.

The library of the University of Missouri has received a gift of about 2000 volumes, chiefly on physics and chemistry, from Dr. A. Linston, of St. Louis.

Mr. Franz Kempe, of Stockholm, has given the University of Upsala the sum of about $45,000 for the establishment of an Associate Professorship of Physiological Botany under the condition that Dr. Lundstroem be the first incumbent.

According to the Pharm. Ztg., chemico-bacteriological laboratories are to be established in connection with the Russian governmental and circuit pharmacies. In order to obtain a personel with the proper training, special bacteriological courses for pharmacists are to be given at Moscow.

The Germans are discussing at present (Die chemische Industrie 1898, No. 2) the advisability of establishing "Handelshochschulen" for the thorough scientific and commercial education of merchants. Aachen, Dresden, Hannover and Frankfurt a. M. are cities under consideration. Probably affiliation with the polytechnicums at three of these places will be sought. The establishment of such schools should prove of interest to pharmaceutical manufacturers and wholesalers.

"A degree in pharmacy," says the Pharmaceutical Journal, the official organ of the Pharmaceutical Society of Great Britain, "to be of any real value and receive proper recognition in this country, must be conferred by a university, preferably after a recognized course of study. The proposal to establish a teaching university in London seems to indicate a favorable opportunity for giving serious attention for some better recognition of advanced work in pharmacy than can at present be obtained."

According to a statement made by a representative in the German Reichstag (Pharm. Ztg. 1898, p. 63) European countries have opened their universities to women in the following chronological order: Sweden, 1870; Denmark, Holland and Finnland, 1875; Belgium and Italy, 1876; Norway, 1884. Last year Austria also opened the doors of her universities to women. In Switzerland and even Russia this privilege or concession to women has for a long time been one of the modern achievements. Only Germany, and especially Prussia seems to hold back. The Secretary of State informed the Reichstag that if a certain interpretation of Reichsgewerbeordnung will be accepted by the government the universities will no doubt be thrown open to medical, pharmaceutical and dental students irrespective of sex.

Scientific Societies.

Pharmaceutical Society of Great Britain.—According to the Registrar's report the society was 5,548 strong during 1897, against 5,671 during 1896. Of the former 1,552 are styled Ph. C. members, 556 C. & D. members, 1,721 C. & D. associates in

business, 946 C. & D. associates not in business, and 873 students.

Of 8,414 candidates who took the first examination, 678 passed and 736 (52.05 p. c.) failed. In London 863 candidates took the minor examination, in Edinburg 578. Of the former 68.71 p. c. failed, of the latter 67,12 p. c. In London 96 candidates took the major examination, in Edinburg 10. Of the former 46.87 p. c. failed, of the latter 90 p. c., i. e. only one out of the 10 Edinburg candidates passed.

In Memoriam.

La Nature announces the death of Prof. A. Joly, Director of the Chemical Laboratory of the École Normale Supérieure, and professor of the Paris Faculty of Sciences. Born at Fontenay-sous-Bois in 1846, M. Joly entered the Normal School in 1866. When he left this school he became attached to Saint-Claire Deville's laboratory, and was afterwards Professor of Physics in the Lycée Henri IV., which post he occupied until he was nominated subdirector of the laboratory at the Normal School. The titular director of the laboratory at that time was M. Debray. M. Joly next became Instructor (maître de conférences) in chemistry, at the Sorbonne, and then professor attached to the Faculty of Sciences of Paris.

Personals.

The Paris Academy of Sciences has awarded the La Caze prize of 10,000 francs to Professor Roentgen of the University at Wuerzburg.

According to the Apt. Ztg., Professor F. Tiemann, well known as the discoverer of ionone, the artificial violet perfume, and for fifteen years editor of the Berichte of the German Chemical Society, began his scientific career as pharmacist. Occasion for this statement was a banquet given in honor of Prof. Tiemann by a number of his friends in Berlin.

Under the auspices of the German Chemical Society a committee has been organized, which is to secure the means if possible to erect a Kekulé monument in front of the Chemical Institute of the University at Bonn, in which Professor Kekulé lived and taught for almost thirty years. Kekulé is known the world over as the father of the benzol theory, which has proven so valuable to the science of organic chemistry as well as to the chemical industry based on this branch of science. As author of his Lehrbuch der organischen Chemie he was personally instrumental in spreading his structural theories.

Bibliography.

Owing to delay in the manuscript, the Ergänzungsband von Koehler's Medizinalpflanzen could not be completed by last Christmas as was anticipated by the publisher.

At the January meeting of the Paris Society of Pharmacy it was decided to publish a description of Caventou's life and work read some time since at the Paris Academy of Medicine. (*C. & D.* 1897, p. 944 and 1898, p. 107.)

According to the *C. & D.*, a supplement to the last edition of the Danish Pharmacopœia (1893) has just been published. It contains a few alterations and additions, among the latter being formulas for several fluid ex-

tracts, and monographs on phenacetine, salipyrine and bismuth subsalicylate.

The appearance of the first part of Dr. J. Behrendes' Geschichte der Pharmacie (see p. 119 of this number) caused Mr. Oefele to contribute a short note on an old Mesopotamian system of weights and measures to No. 7 of the Apotheker Zeitung.

Tollens' Handbuch der Kohlenhydrate appeared in 1888. In 1895 a supplementary volume was published. The basal work being out of print, a second edition with but slight modifications has been issued by the publisher, Eduard Trewendt.

The American Naturalist has obeyed the law of its being, as The Nation puts it, in moving back to the Massachusetts coast on which it was born, and the 32d volume, dating from January of this year, will bear the imprint of Ginn & Co. Dr. Robert P. Bigelow of the Massachusetts Institute of Technology assumes the editorial control.

Prof. O. Taschenberg has retired from the editorship of Die Natur and has been succeeded by Professor Willi Ule. The journal, published weekly by the Schwetschke'scher Verlag at Halle, but sent to this country in monthly "Hefte" of four numbers, was founded forty-six years ago, under the editorship of Dr. Otto Ule and Dr. Karl Mueller. The latter retired comparatively recently (see vol. 14, supplement, p. 18). The journal maintains are excellent standard of popular science, being neither technical nor trivial.

Pharmaceutical literature is to be enriched by a new work by Georg Dragendorff: Die Heilpflanzen der verschiedenen Völker und Zeiten. The work is to treat of the uses, the principal constituents and history of 12,700 medicinal plants. Professor Dragendorff is well known as a former professor of the University of Dorpat and something good may be expected. The first fascicle has already made its appearance and the others are to appear in rapid succession. Ferdinand Enke of Stuttgart is the publisher.

The Berichte d. d. Pharmaceutischen Gesellschaft will hereafter be published by the Berlin publishers Gebrueder Borntraeger. Seven volumes have been published thus far under the auspices of the society, which was organized to represent the pharmaceutical sciences to the exclusion of professional and trade interests. The journal is of such importance that every scientific student of pharmacy should have access to it. The same firm announces the following works for the beginning of this year: Gesammelte botanische Mittheilungen by S. Schwendener in two 8 vo. volumes; also Mykologische Untersuchungen aus den Tropen by Dr. Carl Holtermann, Privatdocent at the University of Berlin. The latter is a 4° and contains numerous lithographic plates. It has been issued with the financial assistance of the Berlin Academy of Sciences.

Several weeks ago the writer received a personal copy of The pharmacist at work from its author Mr. William C. Alpers, the Director of the Merck Pharmacy. Though the book was not sent for a review, the writer cannot well refrain from

making a few remarks concerning the nature of the work, without, however, giving them the character of a review. Whether the apprenticeship system be continued—as it no doubt will be for some time to come—or whether this system be replaced by a thorough preparation at secondary schools and college, the prospective pharmacist will always have to serve a time of probation. The character of the future licentiate and proprietor will in no small part be modeled during this time of probation. If the prospective pharmacist serves a time as apprentice before his college course, it is apparent that for several reasons his preceptor will be a determining factor of even greater importance. It is a well nigh notorious fact that preceptors are either unconscious of their important position or are consciously neglectful of their duties to their pupils and of their obligation to their calling. The pharmacist at work seems to indicate that the spirit of love for the calling of pharmacy and the sense of duty toward apprentices has not altogether died out. It is with pleasure, therefore, that one peruses its pages and it affords the writer pleasure to avail himself of this opportunity to recommend it to old pharmacists as well as young.

Commercial.

The Culture of Ginseng, the celebrated febrifuge and aphrodisiac of the Chinese, has been of old, one of the principal industries of Corea. According to the British consul at Soül, says the C. & D., quinine has lately been introduced into that country in considerable quantities and is gradually superseding ginseng among the Coreans. The introducers of quinine into Corea are missionaries, who, with a fine sense of practical Christianity, have hit upon the device of selling it at cost price in lieu of wages to their native distributors of tracts. The tract-disseminator re-sells the quinine to the natives at a profit, which he pockets, and the missionaries get their literature distributed free.

Cultivation of Orris Root.*—The digging of orris root (*giaggiolo*) yielded a large crop last year. The principle places of production are the communities of Greve, Dicomana, Pelago, Regello, Bagno, a Ripoli, Pontassieve, Galluzo, Santo Casciano in Val di Pesa, Montespertoli. The finest quality of root comes from the villages Santo Polo and Castellina of the community of Greve.

Considerable cultures of orris have gradually been established in provinces bordering on Florence and furnish roots of equally good quality. They are mainly located in Arezzo, Castelfranco di Sopra and in Lore Ciuffenna, all in the Province of Arezzo, further in the Province of Grosseto, in Faenza in the Province of Ravenna, and in Terni in the Province of Perugia.

The total yield of the crop of 1897 of all the before-named districts of Tuscany is estimated as amounting to

about 1,250,000 kos. whilst it was
" 1,000,000 " in 1890.
and " 800,000 " " 1895.

Next in quality to Tuscany (Florentine) orris root stands the Veronese root. This is, however, inferior in aroma and therefore unfit for the distillation of essential oil.

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* Report of Schimmel & Co.

This root is mainly cultivated in the communities of Tregnago, Cazzano, Illasi and Monteforte in the Province of Verona.

More recently a so-called Veronese orris root is also cultivated and collected in the Province of Vicenza.

The total yield of the Veronese root in normal years is estimated as amounting to 150,000 to 200,000 kilos.

Statements made some years ago as to the extensive cultivation of orris in Calabria in Southern Italy, specially in the neighborhood of Reggio, have proved to be unfounded. Orris, *Iris florentina* L. grows wild near Reggio and Gerace, but not by far in a quantity to make the collection of root commercially profitable, nor has it as yet been cultivated for this purpose.

The following reliable information about the culture of orris may be the more of interest, as little has been known about it. This culture has been going on in Italy for more then two centuries. Although orris root is a special and an important factor in the commerce of Italy, and is of great importance to the perfumery industries in general, no governmental or municipal attention or statistics are directed to the culture and production of and commerce in, this commodity.

Orris is planted on hills and their declivities, never in valleys, mostly on sunny clearings, or lengthwise between rows of vines in vine-yards, seldom in extensive fields. It grows only in dry, stony ground. When planted, the plants need no further care and are left undisturbed for 2 to 3 years. Then the gathering of the rhizomes commences and their cutting, cleaning and preparation for the market requires patient and tiresome labor. Generally the root is harvested in the third year, but when prices are high and profitable, it is frequently already cut in the second year of the growth of the plant. But when this is not the case, it is preferable to cut the root in the third year because it is then larger, fuller and of finer appearance than the meagre biennial root. On the other hand 100 kilos of green biennial roots yield about 40 kilos of dry root, while the 3 years old root furnishes but 30 to 35 per cent of dry root.

The age of the root may readily be recognized, as seen from plants sent to us, by the 2 or 3 fold joints. Half of the last joint remains on the living plant, as this is replanted after the roots have been cut off. The replanting is done at once or within 14 days in new ground. The old ground is left for recovery for at least one year, but may meanwhile be used for raising cereals.

The freshly cut roots are first placed in water in order to facilitate peeling. They are subsequently exposed to the sun for drying. This is generally accomplished within 14 days.

Orris roots from Morocco and East India have lately been brought into the market in considerable quantities, but they are utterly unfit for distillation and perfumery. Their miserable appearance bears evidence of the fact that no care is taken in the proper culture and preparation of the root.

African Copals.*—Dr. E. Gilg has studied the different varieties of Afri-

* Notizblatt d. koenigl. bot. Gartens u. Mus. zu Berlin, No. 5.

can copal in relation to their botanical sources. Zanzibar sends to the market three different kinds. 1) Copal from the tree, an inferior variety collected from the stems of *Trachylobium verrucosum*; 2) a middle quality called Chakazzi-copal, dug from the earth in a half-fossilized condition where it has lain for long periods of time, covered by the accumulated soil and marked by a slight weathered crust; and 3) the best of all kinds of copal, the so-called Zanzibar copal, a superior variety, likewise dug from the earth where it has been preserved since it was freed from the trees producing it. In many places where copal is dug all traces of these growths have long since passed away, showing that the resin exuded by them has lain in the earth for long periods of time. All of the above varieties are supposed to have been excreted resin masses from *Trachylobium verrucosum*.

This tree is a large forest tree belonging to the natural order *Leguminosæ*. It reaches a height of 40 meters and has a thick stem and widely spreading branches. The leaves are pinnate, consisting of two entire, leathery, shining leaflets 5 to 8 cm. long and 3 to 4 cm. wide. The red flowers are rather large and beautiful, arranged in richly-flavored, spreading panicles. The fruit oblong-spherical, closely covered with warts and wrinkles and never dehisces. This tree is distributed along the Zanzibar coast, in Mozambique and in Madagascar and forms an essential part of the coastal flora. It never occurs inland beyond the reach of the ocean climate. The stem and branches are richly covered with a clear, resinous excretion. This hardens with extraordinary rapidity, the liquid resin never falling in drops. Pieces of considerable size are sometimes found on the ground, having fallen already hardened from the tree. The form and color of the tree copal is very various, but the smooth, polished surface is characteristic.

Concerning the plants furnishing other African copals, little is known. Inhambane-copal is found in the interior of Mozambique and dug in large quantities in a half-fossil condition. It seems to have remained in the ground a comparatively short time since it has a relatively low melting point, 260°. In many points it agrees with the West African copal from the Gold coast. It is a product of *Copaiba conjugata* and perhaps also of *C. Mopane*. In all probability the West African copals in general are produced by members of this genus. Angola copal is dug from the earth in regions now lacking vegetation, from some sandy desert regions occupied by *Euphorbia* species and other plants of like habit. The resin is the product remaining buried in the soil from growths long since extinct.

Formerly Zanzibar copal came into the European market generally in East Indian vessels from Bombay and this product was known as Bombay copal. More recently, however, much copal is brought directly to Europe, especially to Hamburg. Zanzibar copal comes into commerce in the form of grains, or flattened pieces often having a diameter of over 20 cm. When uncleaned, the resin is covered with an opaque weathered crust containing sand. The interior is clear and transparent, from pale yellowish to reddish-brown in color. When copal comes into commerce, the crust is mostly re-

moved, a work done in part on the coast, in part also in North America and Europe. Very considerable quantities of copal are washed at Salem, Mass., and formerly Salem copal was frequently found on the market. In order to remove the weathered crust, copal is either scraped or washed. It is scraped especially often in East India, the earthy crust being simply abraded off until the clear interior is reached. Washing, however, is a chemical process by which the earthy crust is destroyed by means of treatment of the raw copal with soda or potash. After drying, the impurities can be simply rubbed off with a brush. After this has taken place, a faceted surface is exposed which is characteristic for genuine old Zanzibar copal. This faceting of the surface is caused by a stronger contraction superficially than internally and the consequent checking takes place.

Zanzibar copal is the hardest of all kinds, approaching in this respect amber. It is completely odorless and tasteless.

The copals from Mozambique and Madagascar stand next in high melting point and hardness. The varieties from the western coast of Africa are considerably softer as a rule but show wide variations. Most of these copals on washing present an irregularly smooth or little angled surface. That from Sierra Leone called pebble copal which in hardness approaches the East African varieties, is much abraded and needs no washing. The form doubtless is due to its having been carried along in streams and rounded off as pebbles are rounded.

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SUPPLEMENT.

Universities and Colleges.

Notes.

The pharmaceutical students at the University at Brussels desire that the degree of Doctor of Pharmacy be bestowed upon graduates of that institution.

Dr. Lawrence Bigelow, a graduate of Harvard and the University of Munich, has recently been appointed Instructor in Physical Chemistry at the University of Michigan.

A course of weekly lectures on pharmaceutical legislation is given at the Paris School of Pharmacy. The lectures are said to be well attended and the course is considered a success.

Professor C. R. Barnes, since 1887 Professor of Botany at the University of Wisconsin and one of the editors of the Botanical Gazette, has accepted the newly created chair of plant physiology at the University of Chicago.

The address on Optimism and pessimism in pharmacy by William C. Alpers, Director of the Merck Pharmacy, delivered at the fourth social meeting of the Alumni Association of the Philadelphia College of Pharmacy, appeared in full in the March number of the Alumni Report.

Of the 162 women studying at the University at Berlin, the Pharm.-Ztg. informs us, 98 are German, 26 American, 23 Russian, 4 Austrian and 4 English, 2 French and one Finnish, Swiss, Dutch, Bulgarian and Hungarian respectively. Most of them are in the philosophical faculty, three study theology, 3 law and 1 medicine.

The appointment of Professor Th. Curtius to the chair of chemistry at Heidelberg, made vacant by the death of Prof. Victor Meyer last summer, caused the chair of chemistry at Bonn to be made vacant a second time in a comparatively short period. Professor Richard Anschuetz, who was associate professor under Prof. Kekulé for a number of years, has been advanced to the directorship of the Poppelsdorfer Institute.

In Memoriam.

Alfred B. Taylor.

On Monday, Feb. 28, one of the historic figures of American pharmacy passed away. Alfred Bower Taylor was born in Philadelphia in 1827, where he passed the greater part of his life. When about twenty he graduated from the Philadelphia College of Pharmacy and some years later he took the bachelor's degree, evidently at the University of Pennsylvania. Until 1887 he was busy mostly in the capacity of pharmaceutical practitioner. He was one of the twelve men who met in New York in 1851, a meeting that caused the organization of the American Pharmaceutical Association in 1852. Mr. Taylor was elected Secretary of the new association. In 1850 Mr. Taylor had been chosen Secretary and Editor of the U. S. P. Committee of Revision. It is stated that of the revisions of 1850, 1860 and 1870, every

line of copy was written in Mr. Taylor's hand, and every proof corrected with his pencil, "a monumental but thankless task," adds the writer of the obituary in The Pharmaceutical Era. His interest in scientific matters is shown by articles published in the American Journal of Pharmacy and in the Proceedings of the American Pharmaceutical Association. Locally his interest found expression in various positions which he held in connection with the Philadelphia College of Pharmacy.

Professional.

During the year 1896|97, 590 applicants were licensed as apothecaries in Germany. During the same period 1294 physicians, 150 veterinary surgeons and 120 dentists were licensed. Of "Nahrungsmittelchemiker" only 55 were licensed. Of these less than one-third were apothecaries, the percentage of apothecaries being much smaller in Prussia than in Baden, a southern state.

"**Geheimmittel** .... sind alle Arzneimittel und Arzneizubereitungen, welche vom Kaiserlichen Gesundheitsamte als solche bezeichnet worden sind," is a new definition offered in Germany for the practical distinction between secret nostrum and specialty.

Mortality among Physicians. — A study of the relative mortality of the professional classes by Dr. Thalam has recently been published in the Wiener medicinische Zeitung (N. Y. Med. Journ.). In this unpleasant competition physicians, unfortunately take the first rank, with a death rate of 9.66 as contrasted with 8.21 among lawyers and 5.33 for the clergy. The most frequent causes of death among professional men of all classes are those referable to the heart; diseases of the lungs appear to play only a small part with physicians. The other most frequent causes of death are gout, diabetes, diseases of the genito-urinary tract, and suicide. The latter has appearantly increased during the past decade, and the only offset to this fact lies in a corresponding decrease in the number of deaths from alcoholism.

An Abuse of Medical Charity. — Last winter a man presented himself at the New York Ophthalmic Hospital and asked that an operation for cataract be performed, stating that he was very poor. The hospital is partly supported by charity. In view of the man's statement that he was unable to pay much, the physician in charge reduced the usual $15 per week to $5 per week for board and attendance. The man was admitted and stayed several weeks. It was then learned that he was senior member of a large wholesale grocery firm, and was worth about $150,000. The hospital, therefore, presented a bill for $200, the full rates; the man refused to pay, the hospital sued, and received a verdict for the amount. Such vigorous treatment applied to a few of the many similar cases constantly occuring would have a beneficial influence upon the community.

History.

Geschictliches über die Apotheken in Danzig is a several page article in No. 12 of the Apt. Ztg. by Otto Helm. The first apothecary shop

was established in 1409. During the next 26 years four others were opened. The apothecaries called themselves "Crudener, von 'Crudi', einer Art heilkräftigen Pfefferkuchens." The first privilege was granted in 1455 by Casimir III, king of Poland. The first "Apothekerordnung" regulating the practice of pharmacy was issued by the commonwealth in 1597.

Goldsmiths at work.—The recently excavated house of A. Vettius is described in the March number of Scribner's by E. Neville-Rolfe under the title of A Pompeiian gentleman's home-life. One of the photographic reproductions of the Dodo, called Goldsmiths at work, is of interest to the student of the history of chemistry in as much as it throws light on the empirical chemical knowledge of the ancients. The furnace and three balances, said to have been painted more than 1900 years ago are especially interesting. The painting is very well preserved.

Chinetum or Cinchona Febrifuge.—The following communication from Prof. de Vrij of the Hague to the Apt. Ztg. is of some historical interest: "When in October 1872 the Secy. of State for India sent me for examination two samples of bark of the first harvest from the new plantations of *Cinchona succirubra* in Rungbee, I advised him not to send the harvested bark to Europe, but to have the total alkaloids prepared in India 'for the benefit of the natives.' In accordance with this advice Mr. C. H. Wood, a chemist, was appointed government quinologist in 1873 and sent to Bengal. Immediately upon his arrival he began to extract the total alkaloids from this bark according to my method. This mixture contains at least four alkaloids: quinine, cinchonidine, cinchonine and amorphous alkaloid, and was called 'cinchona febrifuge' in Bengal, whereas in Europe it became known as 'chinetum'.

Whereas in Europe it has found little favor, it is up to this day used extensively in India. According to Dr. King's official report in The Bengal government plantations (Report 1896—97) it is largely used by the non-official public, who are under no sort of compulsion to use it in preference to other febrifuges, but who do so because they find it such an efficient medicine." In the Nieuw Tijdschrift voor Pharmacie en Nederland for 1886, p. 103, Dr. de Vrij gave a complete account of the history of this febrifuge.

Bibliography.

A new French homeopathic pharmacopœia has been published by the well-known Paris publishers, J. B. Balliére, et Fils.

The preface to the Cologne pharmacopoeia of 1565 was reprinted in No. 20 of the Apt.-Ztg. and makes interesting reading.

Number 20 of the Berichte d. d. chem. Gesellsch. contains necrologies of Eugen Baumann, Friedrich Stohmann and C. W. Blomstrand.

Part twelve of the Minnesota Botanical Studies has just been issued. It contains the title page, table of contents and the index of vol. one, which is concluded with this number.

The famous text-book of botany by Strasburger, Schimper, Noll and

Schenck has been translated by Dr. H. C. Porter of the University of Pennsylvania and is announced as nearly ready by Macmillans.

With the close of the thirty-sixth volume, the Pharmaceutische Zeitschrift für Russland ceases as a weekly, but will hereafter be issued as a gratis quarterly supplement in connection with the Russian publication.

Scientific students interested in the history of American science will want to read the illustrated article on The Academy of Natural Sciences of St. Louis by Prof. Frederick Starr in the March number of Appletons' Popular Science Monthly.

With January of this year the twentieth volume of Naturæ novitates began. It is a bibliography of all new publications of all countries in the line of natural history and the exact sciences. It is published by Friedlaender & Sohn of Berlin.

A second edition of Die Untersuchung landwirthschaftlich und gewerblich wichtiger Stoffe, a practical handbook by Dr. J. Koenig of the agricultural experiment station in Muenster i. W. has just appeared with Paul Parey of Berlin.

Physical chemists will, no doubt, be glad to learn that the Arbeiten des Physikalisch-Chemischen Instituts der Universitaet Leipzig aus den Jahren 1887—1896 have been collected and published in four volumnes by Professor W. Ostwald, the director of the institute.

Outlines of industrial chemistry is the title of a text-book for students to be published this spring by the Macmillan Co. It is to be of moderate size and to embrace the the whole field. Dr. Frank H. Thorp. Instructor in Industrial Chemistry in the Mass. Institute of Technology, is the author.

A botanical as well as bibliographic curiosity is the Kashmirian birch-bark manuscript of the Atharva-Veda which is said to be one of the most precious oriental documents in existence. It is in possession of the University of Tuebingen. Photographic reproductions of it are to be made.

Dr. W. von Schroeder, Professor of Pharmacology at the University of Heidelberg, who died January 28, was remembered at the session of the German Chemical Society held Febrnary 14. A biographical sketch prepared by Prof. Gottlieb of Heidelberg was read at that occasion and will be found in No. 3 of the Berichte for this year.

The February number of the Journal of the Chemical Society contains the Kekulé memorial lecture delivered on the 15th of December last by Francis R. Jopp. It constitutes No. VII of the Chemical Society's memorial lectures. An excellent photographic likeness of the chemical philosopher with facsimile signature accompanies the very interesting address.

In British Central Africa, Sir Harry H. Johnston, the able governor of this "Cinderella among the protectorates" as the author calls it, gives an interesting "account of a portion of the territories under British influence north of the Zambezi". The pharmacognosist will be interested not only in the illustrations

of natural scenery but also in the description of the physical features and in the chapters on the botany of the country. The book is published by Edward Arnold.

Die Allgemeine Zeitung, 1798—1898 is the title of a book by Ed. Heych of Munich, which constitutes a valuable contribution not only to the history of the German press, but of German civilization, for no political, social, religious or scientific movement of note seems to have taken place in Germany during the past century without being more or less adequately reflected in this paper. The most eminent men have contributed to it. The reviewer in The Nation calls attention to several shortcomings as well as to the numerous excellencies of the book. The critic says: "Scarcely any mention mention is made of the many leading men of science, like Liebig, for example, who used this journal as the best medium of communicating the results of their researches to the general public."

The Zeitschrift für den physikalischen nnd chemischen Unterricht celebrates the completion of its tenth year and volume by a very strong January number, opening the eleventh volume. According to The Nation's report, the responsible editor, Dr. Poche, strongly reaffirms his old contention of the humanistic character of all rightly directed physical instruction. Van't Hoff has an important paper on stereochemistry, and the number is otherwise full of good matter. This publication can be most heartily recommended to teachers of the physical sciences in secondary schools. Julius Springer of Berlin publishes it.

CATALOGUES RECEIVED:—

P. Blakiston, Son & Co. — Philadelphia. Recent medical publications.

S. Calvary & Co.—Berlin. Antiq. Katalog No. 192. Curiosa medica et naturalia.

Ginn & Co.—Boston. Bulletin of new and forthcoming books. February 1898.

Lemcke & Buechner—New York. Monthly bulletin of world-literature. 1898. No. 1.

U. S. Dept. of Agr. — Washington. D. C. Monthly list of publications, Jan. and Feb., 1898.

Commercial.

Production of Platinum. — The amount of platinum produced in the Ural during 1880 was 2946 ko., in 1895 the amount was 4413 ko., whereas Borneo and South America together produced little over 100 ko. during the same year. On account of the numerous demands for platinum, the present price for pure platinum is given in the Apt. Ztg. as $350.00.

Cloves.—According to the C. & D. a leading firm of clove-merchants has entered upon the trial of a new method of drying cloves. The apparatus is a French one which was originally designed for incubating silk cocoons, and consists of a water-jacketed oblong oven, fitted with shelves. It is expected, by heating the box to about 180° F., to dry cloves in two hours instead of three or four days, which is the time it takes by the ordinary method of drying them in the sun. It is questioned by authorities whether the new method will be an improvement, especially as the apparatus

weighs five tons, too heavy a weight to move about in Zanzibar. At present the drying of cloves merely means putting them out in the morning and taking them in at night. They are spread out close to the house, where there are generally plenty of people about to run them in quickly if rain comes on. Artificial heating may improve the quality of cloves, but it is considered that quality depends quite as much upon the picking as upon the drying.

Cod Liver Oil. — "The fishing is almost a failure" was the cable received several weeks ago by the C. & D. The message, however, was received with much unconcern since the consumption of oil has been light and the market is well stocked. That a prediction as to yield is rather previous before the spawning season is over becomes apparent from the following statement made by Dr. Pechel Moeller: "In the year 1887 it happened that the weather of Lofoten was exceedingly stormy during practically the whole of the fishing season, and whether on that account or not, a rather abnormal thing happened: one of the shoals of cod left the banks and entered the Ostnaesfjord in the island of East Vaagö. It was a most fortunate occurrence for the fishermen, for they were able to let down the gear in the sheltered waters of the fjord when it was impossible for them to venture out to the banks. The shoal entered the fjord early in January, and as soon as the news got abroad, about 2500 boats congregated at the spot and were successful in catching thirteen millions of fish. This immense number was, however, a mere nothing as compared to the total in the shoal."

Some Exports of South China and Indo-China. — Augustin Henry in an article dealing with various economic products of the East brings out some very interesting facts. (Pharm. Journ.)

Of the cinnamon and cassia barks known to commerce but one is known definitely to science. Cassia bark is produced by *Cinnamomum cassia* Blume, a tree cultivated in the Chinese provinces, Kwangsi and Kwangtung. This bark comes into Hongkong by steamer and by junk. The statistics for 1896 indicate the following receipts:

	Piculs.	Value Taels.
Cassia lignea,	73,471	524,398
Cassia twigs,	11,451	7,771
Cassia twig bark,	11,820	25,457
Cassia broken,	3,676	12,865

The cassia lignea comes in the main by junk from Kowloon. Thicker barks are distinguished as cinnamon. Small quantities of cinnamon are produced in the same localities. The figures for 1896 are as follows:

	Piculs.	Value Taels.
Exported from Canton,	89	4,494
Exported from Pakhoi,	10	307

The bark produced in Kwangsi and Kwangtung, distinguished as cinnamon, is simply the thick bark of very old trees of the kind yielding cassia bark.

The cinnamon most valued by the Chinese is that produced in the Laos states now controlled by France. The botanical source of this product is not established. The bark comes in pieces fifteen inches long and four inches broad. It is conveyed by pedlars in small quantities to different parts of China and sold at enormous prices. Nothing is known concerning the quantity produced.

Annam cassia, known also as Saigon cinnamon, is not known in the London market, but is imported from Hongkong into the United States. The name Saigon is a misname, since Cochin China, of which Saigon is the capital, produces little of this bark. The exports for 1895 are as follows:

	Kilogr.	Value Francs.
Annam,	280,633	428,168
Cochin China,	1,381	13,830

Nothing definite is known about the plant yielding this bark. It occurs in the wildest parts of Annam and is not known botanically.

Cardamoms of two or three kinds are exported from Indo-China. The statistics for 1895 are as follows:

	Kilogr.	Value Francs.
Cochin China,	15,462	106,140
Annam,	18,826	17,035
Tongking,	68,767	74,489

The plants yielding these cardamoms are not known to science.

The dye-yam, *Dioscorea mipogonoides* Oliver, *Cunao* of the Annamese, *Shu-lang* of the Chinese, *faux gambier* of the French, is exported in large quantities from Indo-China to Southern China where it is used for tanning and dyeing coarse silk and cotton fabrics, fish nets, etc. The statistics for 1895 are as follows:

	Kilogr.	Value Francs.
Tongking export,	3,675,176	372,176
Annam export,	681,175	44,521

The exportation of camphor from the Chinese mainland for 1896 is as follows:

Export from Wenchow,	11	piculs.
" " Canton,	332	"
" " Kowloon,	438	"
" " Pakhoi,	404	"

From Amoy, 1177 piculs were exported, probably produced in Formosa and smuggled over from the island in junks.

The tree producing star anise, *Illicium verum* Hook. F., occurs in Kwangsi and Tongking in China. Enormous quantities of the poisonous fruit of *Illicium religiosum* of Japan are imported into China. In but one port is the true article distinguished from the poisonous adulterant. In 1896, Shanghai received the following:

	Piculs.	Value Taels.
Star aniseseed,	2490	52,181
Japan aniseseed,	2514	7,542

Pakhoi is practically the only port of export. The quantity for 1896 being 6691 piculs, valued at 133,817 taels. The oil is sent from Haifong to France. The export of oil from Pakhoi for 1896 was 2053 piculs, valued ad 410,692 taels. In gathering the star anise fruit, the natives so damage the trees that a good crop is possible only once in three years.

CATALOGUES & PRICE-LISTS RECEIVED:

Baker & Co.—Newark, N. J. Data concerning platinum.

Fritzsche Brothers.—New York. Wholesale price list. March, 1898.

Roessler & Hasslacher Chem. Co.—Price list. March, 1898.

Watertown Thermometer Co.—Watertown, N. Y. Illustrated Catalogue and pricelist.

REPORTS AND PAMPHLETS RECEIVED:—

Heinrich Haensel—Pirna. Report on essential oils and essences. 1897.

Parke, Davis & Co.—Detroit. Leaflet No. 7. Cod liver oil in palatable form.

The following new Books may be secured from the

Geo. Brumder Book-Department, Milwaukee, Wis.

H. C. MAERCKER, MANAGER.

Alpers, W. C. The pharmacist at work ..... $ 1.50
Armstrong, L. Electric Movement in Air and Water. With theoretical inferences. Plates, folio 12.50
Beckurts, H. Analytische Chemie f. Apotheker 4.00
Bernthsen. Kurzes Lehrbuch der organ. Chemie. 6. Aufl. 3.75
Biechele, M. Die chemischen Gleichungen der wichtigsten organ. und anorgan. Stoffe. M. Nachtrag. 2. Aufl. 4.25
— — Die gebräuchlichsten Chemikalien f. d. techn., analyt. u. pharmazeut. Gebrauch 1.75
Binns, C. F. Ceramic Technology; being some aspects of technical science as applied to pottery manufacture 5.00
Binz, C. Grundzüge d. Arzneimittellehre. 12. Aufl. 2.00
— — Vorlesungen über Pharmakologie 6.00
Borchers, W. Electric Smelting and Refining. Extraction and treatment of metals by means of electric current. 8vo, cloth 6 50
Buck, R. C. A manual of trigonometry for young sailors and officers of the merchant navy. cr. 8vo, cloth 1.40
Butler, G. F. Textbook of materia medica, therapeutics and pharmacology. Illus. 8vo 4.50
Capaun-Karlowa, C. F. Medizinische Spezialitäten, eine Sammlg. aller bekannten medizin. Geheimmittel m. Angabe ihrer Zusammensetzg. 3. Aufl. 1.40
Coleman, T. E. Price-book for approximate estimates for architects, engineers, builders. Oblong 16mo, limp cloth ..... .80
Clarke, F. W. Constants of Nature, Part 5: a recalculation of atomic weights. 8vo, paper 8.40
Clarkson, A. Textbook of histology. Illus. 8vo 6.25
Classen, Alex. Quantitative Chemical Analysis by Electrolysis. Third English edition, translated from the Fourth German Edition by W. H. Herrick and B. B. Boltwood. 8vo .....
Crothers and Bice. Elements of Latin; for students of medicine and pharmacy 1.50
Dawson, P. Electric Railways and Tramways; their construction and operation. A practical handbook setting forth at length the modern application of Electricity as a motive power for railways and tramways. 503 illus. and 183 tables. 12.50
Dolbear, A. E. Modes of motion: or, mechanical conceptions of physical phenomena. 12mo, cloth ... .75
Durst, A. Grundzüge d. Arzneidosenlehre in Bezug auf die innere Anwendung der Heilmittel 2.00
Easy Lettering. A De Luxe edition, on heavy plate paper and bound in "Canvoboards", oblong ..... .50
Eijndhofen, A. J. Van. A comparison between the French and English methods of ascertaining the illuminating powers of Coal Gas. 8vo, cloth 1.60
Fothergill, J. M. Practitioner's handbook of treatment; ed. by W. Murrell. 4th Ed 5.50
Friedheim. Einführung i. d. Stud. d. qualitativen chem. Analyse. 8. Aufl 2.75
Geissler. Grundriss d. pharmazeut. Maassanalyse ... 1.35
Hager, H. Handbuch d. pharmaz. Praxis. 3 Bde ... 17.00
Hahn, E., & J. Holfert. Spezialitäten und Geheimmittel mit Angabe ihrer Zusammensetzg. 5. Aufl. 1.75
Hall, W. S. Elements of the differential and integral calculus with applications. Cloth 2.25
Handbuch f. Pharmazeut. u. Droguisten. I. Band. 2. Aufl 1.75
Handwörterbuch der Pharmazie. Herausgegeb. v. Brestowski. 2 Bde 22.00
Hansen, A. Drogenkunde 1.35
Hanssen, C. J. T. Reform of chemical and physical calculations. 4to, cloth 2.60
Hartwich, C. Die neuen Arzneidrogen a. d. Pflanzenreiche 4.75
Herzfeld, Beer & Matzdorff. Repetitorium f. Chemie, Physik, Pharmakognosie u. Botanik 2.00
Hodgman, F. Surveyor's Tables; being the tables from the manual of land surveying 1.50
Holbrook, M. L. Stirpiculture; or the improvement of offspring through wiser generation 1.00
Howell, W. H. American text-book of physiology. Illus. 8vo ..... $ 6.50
Hutchinson, R. Chemical methods; introd. to the practical study of medicine. Illus 3.00
Jahn, E. Arznei-Therapie der Gegenwart. 3. Aufl ... 2 00
Johnston, W. J. Electrical and Street Railway Directory for 1897. 8vo, cloth 5.00
Jones, R. H. Asbestos and asbestic; properties, occurrence, use. 10 collotype plates and other illus. 8vo 6.40
Killebrew, J. B., and Myrick, H. Tobacco Leaf; culture, cure, marketting, manufacture. Illus., 12mo, cloth 2.00
Kilpatrick, T. S. G. The Hydraulic Gold Miners Manual, including placer mining and simple rules for the discrimination of gems. Illus., 16mo 1.00
Kobert, Rud. Lehrbuch der Pharmakokotherapie. Hlbfrz 5.50
Kommentar zum deutschen Arzneibuch. Hrsgeg. v. H. Hager, B. Fischer etc. 2 Bde 10.00
Krafft, F. Kurzes Lehrbuch der Chemie.
1. Anorganische Chemie 3.75
2. Organische Chemie 5.75
Levy, M. Repetitorium d. Drogenkunde 1.00
Lewin, L. Lehrbuch d. Toxikologie. 2. Aufl 4.00
Lichreich, O., und Alex. Langgaard. Kompendium d. Arzneiverordnung. 4. Aufl 4.00
Miller and Kiliani. Kurzes Lehrbuch d. analyt. Chemie. 3. Aufl 3.75
Monell, S. H. Manual of static electricity in X-ray and therapeutic uses. Illus., 8vo 5.25
— — The Treatment of Disease by electricity. Illus ... 8.50
Morris, J., and Wilkinson, F. The elements of Cotton Spinning; with preface by Sir W. A. Dobson. 2.50
Nitzelnadel, E. Kompendium d. Arzneimittellehre 2.50
Oppenheimer, C. Grundriss d. organ. Chemie 1.00
— — Grundriss d. anorg. Chemie 1.25
Pearman, T. H., and Moor, C. G. The Analysis of Food and Drugs. Part 1.—Milk and milk products. 8vo., sewed 2.00
Penzoldt, F. Lehrbuch d. klinischen Arzneibehandlung. 4. Aufl 7.50
Pringle, J. J. Pictorial Atlas of Skin Diseases and syphilitic affections; from the French with explanatory wood-cuts and texts. 12 parts. Folio, per part 3.00
Remsen. Organische Chemie. 3. Aufl 2.00
Rickard, T. A. Stamp Milling of Gold Ores. Illus ... 2.50
Rothwell, R. P. The Mineral Industry; its statistics, technology and trade in the United States and other countries to the end of 1896. Cloth 5.00
Ruddimann, E. A. Incompatibilities in prescriptions. 12mo 2.00
Schaer, E. und Zenetti. Anleitung zu anal. chem. Uebungsarbeiten auf pharmazeut. u. toxikolog. Gebiete. 2. Aufl 1.75
Schlickum. Repetitorium d. Chemie und Pharmakognosie 1.35
Schmidt, F. W. Kurzes Lehrbuch d. anorg. Chemie. 1.85
Schmidt, E. Ausführl. Lehrbuch der pharmazeut. Chemie.
I. Band. Anorganische Chemie 8.00
II. Band. Organische Chemie 13.00
Schulz, H. Die offizinellen Pflanzen und Pflanzenpräparate 1.85
Schwanert. Hilfsb. z. Ausführung chem. Arbeiten. 3. Aufl 3.25
Taylor. Practical treatise on sexual disorders of the male and female, ill. 8vo 3.25
Thoms, H. Arzneimittel d. organ. Chem. 2. Aufl 2.00
Waring, H. J. Diseases of the liver, gall, bladder and biliary system. 8vo 4.00
Webster, A. G. The theory of Electricity and Magnetism, being lectures on mathematical physics 3.50
Wetterstrand, O. G. Hypnotism and its application to practical medicine. 8vo 2.00
Wilson, J. C. American textbook of applied therapeutics. Illus, 8vo 7.25

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SUPPLEMENT.

Universities and Colleges.

Notes.

The Chemical Institute of Fresenius in Wiesbaden, which opened its doors for the first time May 1, 1848, has recently concluded its hundredth semester. As is known, the founder, Dr. R. Fresenius, died June 11 of last year. The attendance during the past winter semester appears to have been about as good as usual.

That the Institute for physical chemistry and electro-chemistry at Goettingen, the only one of its kind, under the direction of Professor Nernst is meeting with favor not only in scientific but also in commercial circles is evidenced by the donation of M. 20,000 on the part of Mr. Krupp in Essen.

New York College of Pharmacy. — At the regular annual meeting held Tuesday, March 15, the following officers were elected: President, Edward Kemp; First Vice-President, Charles F. Chandler; Second Vice-President, John R. Caswell: Third Vice-President, George M. Olcott; Treasurer, Clarence O. Bigelow; Secretary, Thomas F. Main; Assistant Secretary, O. J. Griffen; Trustees to serve three years, Otto P. Amend, E. C. Goetting, Oscar Goldmann, Adolph Henning, and David Master Jr.

Field Columbian Museum. — The Herbarium of the Field Columbian Museum has recently issued an announcement for the benefit of botanists and others interested in herbaria. From this announcement it will be seen that in two years over fifty thousand mounted and classified sheets have been accumulated. This collection contains representatives from all parts of the world and comes from the hands of hundreds of collectors. Many special collections are included; among them are the *Salix* and *Carex* collections of Bebb and the *Euphorbia* collection of Millspaugh.

University Education. — Dr. Michael Foster, Professor in the University of Cambridge, England, and known the world over as physiologist, delivered an address on the above subject before the Johns Hopkins University October last. The address was printed in the last number of the J. H. Hospital Bulletin and although all of it affords interesting and instructive reading only a short paragraph can here be reproduced. After a brief outline of the history of the "famous and great university" of which he is a member, and after having pointed out some of the disadvantages that result from the increasing age of an institution of learning, he calls attention to some of the lessons to be learned. "Lastly," he says, "there was another feature which the old university possessed and which I may also call an essential feature of a university, that is, the spirit of inquiry. No university can prosper as a university that not only does its best to favor special inquiries when these are started within it, but also in the whole course of its teaching develops, or strives to develop the spirit of inquiry. Now here again I fear that examinations—such at all events is

my experience—are antagonistic to inquiry; and I would suggest that in arranging examinations one ought always to look ahead to see how far one can possibly order those examinations so as to favor the teaching which teaches in the real and true way, teaching by regarding each bit of learning as in itself an act of inquiry, and so as to favor in the highest degree actual inquiry when it is taken in hand. This of course is antagonistic to our function of examinations, namely, that of putting young men to compete against each other. You cannot so judge inquiries as to put the inquirers in any class list or in any order; the most you can do is to give an inquiry the stamp of approval of the university, as testimony that the inquiry has been carried out in a satisfactory way. It is true that in this way you lose that which is sometimes thought to be of great value, emulation between scholars; but if you take away that kind of emulation you substitute for it another one far more strong and effective, that emulation that comes of striving with nature. I take it that the good which is done to a lad in starting him upon an inquiry is infinitely greater than any which can be gained by competition with his fellow students."

New York Botanical Garden.—The third number of volume one of the Bulletin of the New York Botanical Garden contains reports of the Committees on plans and membership; two reports of the Secretary and Director-in-chief, discriptions of the range of horticultural houses and the botanical museum, a list of plants in the temporary green houses and grounds, and other short reports and minor articles.

In the summer of 1895 the Board appointed a general committee on plans. Early in 1897 this committee reported the general plan of the garden. In the later part of June of the same year, plans for a Botanical Museum and a range of horticultural houses were adopted and in Sept. an issue of New York city bonds to the amount of $500,000 for the construction of these buildings was duly authorized. On December 31, 1897, ground was formally broken. It may, therefore, now be said that the work of providing the buildings for the garden is fully inaugurated.

Other lines of work have been progressing constantly. Grading, draining, putting in sewers, roads and paths; the establishment of temporary nurseries; and the planting of permanent borders have all received attention. Considerable progress has also been made in collecting a library and an herbarium, the latter alone having received nearly one hundred thousands accessions including the mycolœpeal collection of Mr. J. B. Ellis of about seventy-five thousand specimens.

The range of horticultural buildings will be made up of thirteen houses covering an area, exclusive of cellar space, of about forty-five thousand square feet. It is the intention to make these houses the most thoroughly constructed and equipped in the country. The museum building will be about three hundred feet long by fifty feet wide. In this building there will be lecture rooms, class rooms, laboratories and library in addition to the very extensive herbarium rooms. Both museum and horticultural houses are essentially fire proof.

CATALOGUES RECEIVED:—

University of Pennsylvania.—Fasciculus of the Dept. of Med., 1897—'98, announcements for session 1898—'99.

Cornell University.—Announcement of the N. Y. State Veterinary College, 1898—'99.

Philadelphia Polyclinic.—Special week in internal medicine and clinical diagnosis, May 9—14, 1898.

Professional.

German Apothecaries and the Tablet. — The question of tablet triturates which has caused so much discussion in this country, has been brought rather forcibly to the notice of the German apothecary by the London firm of Burroughs, Wellcome & Co. Although many expressions in the German pharmaceutical press clearly demonstrate that the Germans have as little love for the "B. W. & Co." trade mark as the English have for the "made in Germany," this feeling would protect them little against the invasion of the tablet. The use of the tablet in itself is not new to Germany, but its application to almost anything and everything is objected to. The official organ of the German Apothecaries Association admits the great advantages of the tablet for medication e. g. in the army in the case of war, for travel etc. It is opposed, however, to have the manufacturer invade the "ureigenstes Gebiet" of the apothecary by making tablets stated to contain 0.01 g. morphine or 0.005 g. arsenic etc. The editor or writer complains that the apothecary cannot possibly assume responsibility for the correct dosage or possibly even proper contents of such tablets, but can be compelled to dispense them upon the presentation of a physicians prescription.

The firm of B. W. & Co. has requested a German professor of chemistry to examine some of their tablets which he purchased at random in the open market. He selected tablets labled to contain 1) 0.5 g. potassium iodide, 2) 0.005 arsenous acid and 3) 0.05 g. copper sulphate. He showed that not only the actual weight of the tablet approximated closely the weight claimed for it but that the analytical results showed like approximation. He went so far as to claim that the results of the machine, in his opinion, were more accurate than those of the balance employed in the dosing of powders. Against this insinuation of lack of skill on part of the apothecary the Apt.-Ztg. protests. Prussia has a law prohibiting the preparation of dosed powders in advance for stock in order to prevent mistakes. It is thought that the same law ought to be extended so as to cover the tablet, for the same line of reasoning would apply to the latter. Realizing, on the other hand, the forward movement of the tablet in spite of protestations, the official organ recommends apothecaries to provide themselves with tablet machines so as to be able to meet the demands of the physician. The outcome of the present movement will be watched with interest in this country.

History.

Anæsthesia. — On p. 43 of the Supplement for 1897 a brief abstract of Dr. Young's account of the discovery of anæsthesia by ether was

given. Attention was also called to the paper of Mr. Jacobs which has since been published in the Proc. A. Ph. A. for 1897, p. 315. In a letter to the Johns Hopkins Hospital Bulletin (April number p. 83) Dr. Wilhite calls attention to the story that his father had been "the first to produce the full anæsthetic effect of sulphuric ether accidentally" and that "when studying medicine under Dr. Long he related to him the circumstance." The short story is "that on one occasion while a boy at a country frolic in Georgia, he (Wilhite's father) with others caught a negro boy, and while the others held the boy, he administered to him sulphuric ether, rendering him unconcious, etc., so much that a doctor was sent for to revive the negro boy."

In a letter to the same journal, Dr. Young points to the fact that Wilhite did not enter Long's office until two years after Long's discovery; that he was not present at the first operation; that he was a boy younger by seven years than Long, and therefore probably not Long's confidant and adviser. Dr. Young further points out that the custom of inhaling ether in that part of Georgia began in the winter of 1841 and 1842 and was originated by Long. Others have even gone so far as to declare the negro story fiction pure and simple.

Conception of the Benzene Theory. In connection with the issue of a circular calling for subscriptions to the Kekulé monument, Professor Ira Remsen in the American Chemical Journal makes the following statement concerning Kekulé's work: "There is scarcely any chemist who has exerted an influence equal to that exerted by Kekulé upon the advance of chemistry during the past thirty years. It is difficult to realize how thoroughly the chemistry of to-day is saturated with his ideas. Not only do we owe to him the wonderfully fruitful benzene theory, but we owe to him very largely our present conceptions of the constitution of chemical compounds—conceptions which, however imperfect they may be, have been and are of the greatest service to all chemists, whether they are working with organic or inorganic compounds, on problems of constitution or of dynamics, in the field of pure chemistry or of chemical industry."

In connection with the movement at present on foot it seems especially appropriate to call attention to Kekulé's autobiographical statement as to his conception of chemical structure as made at the banquet given in his honor in Berlin in the spring of 1890. The translation is taken from the Kekulé memorial lecture by Francis R. Jopp delivered before the Chemical Society in London February last.

"During my stay in London I resided for a considerable time in Clapham Road in the Common. I frequently, however, spent my evenings with my friend Hugo Müller at Islington, at the opposite end of the giant town. We talked of many things, but oftenest of our beloved chemistry. One fine summer evening I was returning by the last omnibus, 'outside', as usual, through the deserted streets of the metropolis, which were at other times full of life. I fell into a reverie (Träumerei) and lo, the atoms were gambolling before my eyes! Whenever, hitherto,

these diminutive beings had appeared to me, they had always been in motion; but up to that time I had never been able to discern the nature of their motion. Now, however, I saw how, frequently, two smaller atoms united to form a pair; how a larger one embraced two smaller ones; how still larger ones kept hold of three or even four of the smaller; whilst the whole kept whirling in a giddy dance. I saw how the larger ones formed a chain, dragging the smaller ones after them, but only at the ends of the chain. I saw what our Past Master, Kopp, my highly honored teacher and friend, has depicted with such charm in his 'Molekular-welt,' but I saw it long before him. The cry of the conductor: 'Clapham Road,' awakened me from my dreaming; but I spent part of the night in putting on paper at least sketches of these dream forms. This was the origin of the Structur theorie."

Then he relates a similar experience of how the idea of the benzene theory occured to him. This refers to a later period when Kekulé was professor in Ghent, but may be quoted here in connection with the previous passage. He describes how he was at work one evening:

"I was sitting, writing at my text-book; but the work did not progress; my thoughts were elsewhere. I turned my chair to the fire and dozed. Again the stones were gambolling before my eyes. This time the smaller groups kept modestly in the background. My mental eye, rendered more acute by repeated visions of the kind, could now distinguish larger structures, of manifold conformation: long rows, sometimes more closely fitted together; all twining and twisting in snake-like motion. But look! What was that? One of the snakes had seized hold of its own tail, and the form whirled mockingly before my eyes. As if by a flash of lightning, I awoke and this time I spent the rest of the night in working out the consequences of the hypothesis.

"Let us learn to dream, gentlemen," adds Kekulé, then perhaps we shall find the truth..... but let us beware of publishing our dreams before they have been put to proof by the waking understanding."

After his return from England, Kekulé went to Heidelberg, where on February 29th, 1856, he obtained the venia legendi in Chemistry at the University. The young Privat docent fitted up a modest laboratory consisting of a room with a kitchen adjoining it. Among the few students whom he could accommodate was Adolf Baeyer, who there carried out his well known work on the organo-arsenic compounds. Kekulé himself prepared the experiments and most of the specimens for his lectures on organic chemistry.

Bibliography.

The British Pharmacopœia, 1898, is now in the hands of the printer.

It is reported in Book Reviews, that Professor Russel H. Chittenden, without resigning his professorship in Yale University, has accepted the directorship of the department of physiological chemistry in Columbia University. Dr. W. J. Gies has been appointed instructor and Messrs. A. H. Redland and H. E. McDermott have been appointed assistants in the department.

The Scientific American, No. 14, 1898, contains a highly illustrated article on the liquifaction of air by Prof. W. C. Peckham of Adelphi College.

In view of the proposed new edition of the German Pharmacopœia, Dr. Bruno Hirsch, the well-known pharmacopœial writer, makes a number of general suggestions in No. 14 of the Pharmaceutische Centralhalle.

No. 15 of the Pharmaceutische Post contains apparently in full the address entitled Ueber die Rolle des Sauerstoffes beim thierischen Stoffwechsel, which was delivered by Prof. E. Meissl before the Austrian Chemical Society last January.

New works by Julius Springer are: 1. Waarenprüfungsbuch für Apotheker; and 2. Sammlung der Bestimmungen über die Prüfung der Nahrungsmittel-Chemiker, which might prove instructive reading to some persons interested in the pure food and drug laws now exercising so many people in this country.

Of C. Jorets' work Les plantes dans l'antiquité et le moyen-âge, which treats of their history, uses and symbolism, vol. one of the first part comprising the plants of the classic Orient, has made its appearance.

Revue de bibliographie médicale is the title of a new bibliographic monthly published by J. B. Baillière et Fils of Paris. The same publisher announces the second edition of Guide practique pour l'analyse des urines by G. Mercier, "lauréat" of the Paris Superior School of Pharmacy; also La matière médiale populaire au XIX. siècle, by Dr. J. M. F. Régius, pharmacien de 1re classe.

Living plants and their properties, by Professors J. C. Arthur of Purdue and D. T. MacDougal of Minnesota, is a book of 242 pages, which in 12 independent chapters deals with the special senses of plants, compass plants, development of irritability, conciousness in plants, distinctions between plants and animals, the significance of color etc. It is published by Baker & Taylor, New York.

The following notices of recent publications are taken from Lemcke and Buechner's Monthly Bulletin of World-Literature. 1. W. van Ryn: Die Stereochemie des Stickstoffs, published by E. Speidel of Zuerich; 2. Jul. H. Mueller: Forschungen in der Natur. I. Bakterien und Eumyceten oder was sind und woher stammen die Spaltpilze? published by Fischer's medicin. Buchh. of Berlin; 3. C. Savoise: Étude sur les alcaloïdes d'origine microbienne.

No. 7 of Merck's Report contains the first installment of a series of large quarto halftone illustrations of the Merck Pharmacy which has recently closed its first year of usefulness as an object lesson of how pharmacy might be practiced to the greater advantage and wellfare of the public. Those who have not seen this "drug store" can obtain a fairly adequate idea of this magnificent pharmacy and the work accomplished therein from the above mentioned illustrations. No. 8 of the same journal contains an illustrated account of the prescription department.

Among the recent announcements of Putnam's is found The history of science by Charles S. Peirce.

Die künstlichen Fiebermittel is the title of a monograph for chemists, apothecaries and physicians by Dr. Hugo Bunzel. It is published by Ferd. Enke of Stuttgart.

The Pharmaceutische Zeitschrift für Russland ceases as a weekly, but will hereafter be issued as a gratis quarterly supplement in connection with the Russian publication.

Part twelve of the Minnesota Botanical Studies has been issued. It contains the title page, table of contents and the index of vol. one, which is concluded with this number.

D. Appleton and Company are getting out a new edition of the large handbook on chemistry of which Sir H. E. Roscoe and the late Prof. Schorlemmer are the authors. The inorganic division of the work, vols. I and II, has been brought up to date by the senior editor and is now out.

Longmans, Green & Co. announce as just published an Introduction to chemical methods of clinical diagnosis by Dr. H. Tappeiner, Professor of Pharmacology at the University of Munich, translated from the sixth German edition by Dr. Edmond J. McWeeney.

A second edition of Die Untersuchung landwirthschaftlich und gewerblich wichtiger Stoffe by Dr. J. Koenig, Director of the Agr. Exp. Station in Münster i. W. and well known as a writer on agricultural and food products, is announced as just out by Paul Parey of Berlin.

Under the title of Goerbersdorfer Veröffentlichungen, Dr. Rud. Kobert, formerly professor at the Russian University at Dorpat, intends to conclude the publication of his Historical studies which were "forcibly interrupted" by his resignation. Goerbersdorf is the place in which the Brehmer'sche Heilanstalt, of which Dr. Kobert is now director, is located.

A Bibliography of the metals of the platinum group by Dr. James L. Howe, Professor of Chemistry at Washington and Lee University, has been published as No. 1084 of the Smithsonian miscellaneous collections. The work is published on the recommendation of the committee of the Am. Assn. for the Adv. of Sc. having charge of indexing chemical literature.

Some time last year Professor Clemens Winkler delivered an address on the Discovery of new chemical elements before the German Chemical Society. The address has evidently been translated into French, for the April number of Appleton's Popular Science Monthly offers to its readers an English translation from the Revue Scientifique. The March number contains an interesting article on The first thermometers by M. P. Duhem, translated from the Revue des Deux Mondes; also a Sketch of Sir Joseph Lister with portrait.

The following announcements are taken from No. 11 of the Chem. Centr.-Bl.—1) C. Beier: Die Untersuchung unserer wichtigsten

Nahrungs- und Genussmittel; 2) H. Landolt: Das optische Drehungsvermögen organischer Substanzen und dessen praktische Anwendung, second edition, revised with the aid of O Schwensak, P. Lindner, F. Schuett, L. Berendt and T. Posner. 3) J. C. Poggendorff: Biographisch-litterarisches Handwörterbuch zur Geschichte d. exakten Wissenschaften etc., Vol. III (1858—1883), edited by B. W. Feddersen and A. J. v. Oettingen. Vols. one and two can be had at reduced prices. Vol. four is in course of preparation. 4) F. Goose: Die Beziehungen der Benzolderivate zu den Verbindungen der Fettreihe, which constitutes Nos. 1—3 of the Sammlung chemischer und chemisch-technischer Verträge, edited by F. B. Ahrens.

CATALOGUES & BULLETINS RECEIVED:—

J. B. Baillière et Fils — Paris. Revue mensuelle de bibliographie medicale, No. 1.

Ginn & Co.—Boston. Catalogue and announcements, April, 1898.

Lemcke & Buechner—New York. Monthly bulletin of world literature. 1898. Nos. 2—4.

Ernst Guenther — Leipzig. Psychologische und naturwissenschaftliche Schriften.

B. G. Teubner — Leipzig. Mittheilungen, 1898, No. 1.

U. S. Dept. of Agriculture — Washington. Monthly list of publications, March, 1898.

H. Welter — Paris. Catalogue No. 85. Botanique etc.

Commercial.

The Indigo Trade in 1896. — According to the report in Chemische Industrie (21, p. 16), unfavarable weather both at the time of planting and of working up the indigo crop injured the indigo considerably and especially damaged its quality. The high price in rupees during the year caused an expansion in the area planted, hence the harvest in 1896, in spite of all unfavorable conditions, yielded 158,000 maunds (1 maund = 33¾ kilos), a decided increase over the latest estimate.

The yield for 1896, as compared with former years, is shown in the following table, which gives also the geographical distribution of the product:

	1896.	1895.	1894.
Bengal,	17,650	25,750	20,843
Behar,	63,700	73,300	92,384
Benares,	18,950	19,650	8,494
Northwest,	58,500	43,500	38,813
Total,	158,000	162,200	160,534

The countries to which this indigo is sent are indicated in the following table:

Export to	1896|97. Chests.	1895. Chests.	1894. Chests.
Germany,	11,720	14,555	11,463
Great Britain,	17,150	8,181	8,931
Italy,	1,303	1,088	933
Russia,	1,677	2,774	1,815
France,	4,142	6,348	5,039
America,	7,878	6,735	8,917
Levant,	1,003	826	2,876
Totals,	39,873	40,510	39,974

A chest contains about 150 kilos. Prices moved between 25 and 30 rupees pro maund (33¾ kilos). America buys the cheaper grades of indigo and found an abundance of this article during the year.

SUPPLEMENT.

Universities and Colleges.

St. Louis College of Pharmacy. — The St. Louis College of Pharmacy graduated a class of forty-one, of which number twelve are from St. Louis, fourteen from Missouri outside of St. Louis, twelve from Illinois, and one each from Nebraska, Kansas and Texas.

Chicago College of Pharmacy. — The School of Pharmacy of the University of Illinois graduated a class of thirty-seven with the degree of Graduate in Pharmacy. Fifteen were from Chicago, thirteen from Illinois outside of Chicago, five from Wisconsin, and one each from Indiana, Ohio, Vermont and South Dakota. One candidate received the degree of Pharmaceutical Chemist. For the first time in its history the college granted the honorary degree of Master of Pharmacy. The recipients of the degree were Mr. N. Gray Bartlett, Mr. Henry Biroth and Mr. E. H. Sargent, all of Chicago, all of whom have taken a personal interest in professional pharmacy and pharmaceutical education as well as the business side of their calling. The brief biographical sketches supplied by the Actuary of the college are characteristic of many of the better of America's self made pharmacists.

"N. Gray Bartlett was born in Louisville, Ky. in 1840. After the usual attendance at the public schools of his native city, he continued his studies at the Louisville Literary Academy. Subsequently he pursued the study of chemistry under Professor Wright, of the Kentucky School of Medicine, and at the same time served as apothecary in a public dispensary. His first experience in the drug business was with J. L. Morris & Sons, of Louisville. A year later he took a position with his brother at Keokuk, Iowa, where he remained three years. In 1861 Mr. Bartlett came to Chicago and entered the employ of E. H. Sargent, matriculating at the Chicago College of Pharmacy during that year. In 1866 he left Chicago and became associated with his brother in Keokuk. Upon his return to Chicago in 1870, Mr. Bartlett was chosen professor of chemistry at the Chicago Medical College. Shortly afterwards he was elected editor of "The Pharmacist", the monthly journal published by the Chicago College of Pharmacy, and in 1871 became a member of the faculty of the college. During his connection with the Chicago College of Pharmacy as a member of its faculty, he occupied in turn the chairs of chemistry and of pharmacy, served as trustee and for three terms as president of the corporation and was a leading spirit in the management of the School. He resigned his professorship in 1895, much to the regret of the college management.

"Since 1872 Professor Bartlett has conducted a pharmacy in this city and of this he still retains the personal direction. The management of this business together with his strictly professional work as an analytical and consulting chemist have made him one of the busiest men in the city of Chicago.

"Henry Biroth entered the drug

business in 1857 at the age of eighteen becoming apprenticed to Dr. Fred Mahla, a prominent Chicago pharmacist and chemist. Having received a thorough education in the high schools of Germany, his love for botany and chemistry brought him in contact with our pioneer botanist, Dr. Franklin Scammon with whom he often roamed through the outskirts of early Chicago studying the flora. At the opening of the Chicago College of Pharmacy in 1859 he became one of the first students but the call of his preceptor to the chair of pharmacy prevented his further attendance. Upon the beginning of the Civil War Mr. Biroth was among the first volunteers and was sent as a hospital steward to Cairo, Illinois. When his duties were ended at Cairo he returned to Chicago and engaged in the retail drug business, soon becoming prominent in pharmaceutical circles. In 1867 he abondoned the retail business and embarked in manufacturing pharmacy as senior member of the firm of Biroth, Blocki & Co. A few years later he purchased the other interests in the firm just as the great fire of 1871 swept away his plant. This misfortune did not break his conrage. With redoubled energy he returned to the retail business and meeting with good success he began the manufacture of chemical and pharmaceutical preparations, which led him into the preparation of digestive ferments to which finally he gave his entire attention and in the manufactnre of which he is still successfully engaged.

"Mr. Biroth became a member of the Chicago College of Pharmacy upon its reorganization in 1865, and as trustee, treasurer and president of the institution has done much to contribute toward its success. He has also been president of the Illinois Pharmaceutical Association and during the World's Fair was chosen by the American Pharmaceutical Association of which he is a life member, to the onerous position of local Secretary which brought him in personal contact with prominent visiting pharmacists of this country and abroad. Besides these honors, Mr. Biroth was for years president of the schools of Blue Island, one of Chicago's suburbs, where he resides, and is president of its public library. He has always taken the greatest interest in educational affairs, especially in Chicago and vinicity.

"Mr. E. H. Sargent was born at Dover, N. H., Nov. 1830 and was apprenticed to the drug business with Carleton & Hovey, Lowell, Mass. in 1845. He remained with them six years until of age and came to Chicago early in 1852 entering the employ of Franklin Scammon & Co. A few years later Mr. Sargent embarked in business on his own account and meeting with success extended his business so that at the present time he has one of the most complete pharmaceutical establishments in the city. Upon the incorporation of the Chicago College of Pharmacy in 1859, Mr. Sargent became a charter member and has served the institution as secretary, trustee, and president, holding the later office from 1867 until 1872, was editor of the "Pharmacist", one of the founders of the Illinois Microscopical Society, a director of the Chicago Botanical Gardens, president of the American Pharmaceutical Association and has been always a

constant and unselfish worker for the advancement of pharmacy."

CATALOGUES RECEIVED:—

University of Iowa.—Announcement of the Department of Pharmacy, 1898—99.

University of Wisconsin—Madison. Officers and graduates of the U. of W. from its organization in 1849 to 1897.

Scientific Associations.

The American Association, 1898.—The officers of the American Association for the Advancement of Science and the local committees are preparing to make the meeting for 1898 of the association, to be held in Boston, August 22d to 27th, which will be its fiftieth anniversary, or jubilee meeting, worthy of the occasion and of the honorable record the association has made for itself. It is realized (Pop. Sc. Monthly) that the anniversary gives promise of being the most important scientific gathering ever held in the United States. Many foreign men of science have been invited to take part, and many foreign educational and scientific institutions are expected to send delegates. whereby the meeting will be given an international character. Additional interest will be afforded by the meetings of affiliated societies in connection with it. The officers of the Massachusetts Institute of Technology and of the Boston Society of Natural History have offered the use of their halls and rooms—constituting three closely adjoining buildings. The corporation of Havard University will make the association its guest for a day in Cambridge; the Essex Institute has arranged for a day in Salem; and there will be an excursion in the harbor, and after the meeting, trips to the White Mountains and Cape Cod. It is hoped that one of the results of the anniversary meeting will be an increase of the research fund of the association, which in twenty years has grown to only six thousand dollars.

A Seven-hundreth Anniversary.—According to Popular Science Monthly, a proposal was made some time ago in a Belgian journal for the celebration of the seven-hundreth anniversary of the discovery of stone coal, which was made in 1197 by a blacksmith of Liége. He found a kind of black earth, and wood and charcoal being very dear at the time the thought occured to him to try its properties as a combustible. This black earth was coal. The man's name was Hullioz; whence the French word for coal — *houille*. Authentic documents show that coal mines were fully worked in Belgium in 1228 and 1229. The use of coal was introduced into England in 1340, but did not become common till the beginning of the sixteenth century. It was first mined in France in the fourteenth century; in Austria and Bohemia in the last century; while it was mined in North Germany about the year 1200.

Third International Congress of Applied Chemistry.—At the Second International Congress of Applied Chemistry held in Paris in 1896, the year 1898 was fixed for the third congress and Vienna was chosen as the place of meeting. Extensive preparations are being made for the meeting to be held from July 28, to Aug. 2. In addition to the general meetings, special meetings will be

held by twelve sections. Section two on the chemistry of foods, medicinal and pharmaceutical chemistry especially concerns the pharmacist.

The programme for Subsection A on pharmaceutical chemistry is outlined as follows:

1. Galenical preparations like chemicals are to be tested as to purity as far as this is possible. Pharmacopœias or their supplements should at least give the physical and chemical properties and constants of all.

2. Powerful remedies are not only to be prepared according to the same formula in different countries, but their equally high percentage of active ingredient is to be ascertained according to like methods in all countries.

3. In how far is it desirable to apply the new quantitative methods for the estimation of fats and waxes to pharmacopœial preparations of these groups, e. g.: balsams, resins, waxes, fats, volatile oils, etc.?

4. Would it not be expedient to indicate the action of certain substances, especially of volatile oils, toward polarized light, in the pharmacopœias.

5. Of what nature should be the examination of serums and organotherapeutic preparations and what legislative regulation should control their medicinal use?

6. What general requirements, from a medicinal standpoint, are to be made with regard to medicinal wines?

7. Would it not be expedient to determine uniform methods for the assay of active ingredients in the most commonly employed medicated gauzes and bandages?

8. Formulas for the preparation as well as the examination of those medicated soaps that have come into almost universal use should be devised.

9. In how far is the protection by patent or trademark desirable as applied to medicinal preparations.

Those who in the past have been interested in the international discussion of pharmaceutical problems will no doubt be interested in the treatment accorded the subjects enumerated above. By looking over the committees of the various countries to be represented at the congress, pharmacists may find some food for reflection. Neither pharmaceutical nor medical chemistry have been recognized in the organization of the committee for the United States. It is also of interest to note that with one exception, on the Pacific coast, technical chemistry has no representative west of Pennsylvania, worthy of representing applied chemistry at an international congress.

PROCEEDINGS & ANNOUNCEMENTS RECEIVED:—

Cincinnati Sect. Am. Chem. Soc. —Annual announcement for the year 1898.

Professional.

Abuse of our So-called Medical Charities.—A year ago, in a paper read before the Philadelphia County Medical Society, Dr. Edward Jackson called attention to the fact that the proportion of persons receiving free medical treatment in the hospitals and dispensaries of Philadelphia was reaching 30 per cent. of the population. He also quoted the figures that are still being quoted by some of the medical journals, showing

that the free clinics of New York had in 1895 treated 39 per cent. of its population.

The statistics for the year 1897 show that in New York the number receiving free medical assistance is more than one-half of the total population of the city, and that in Philadelphia it has reached fully one-third of the total population. Has not the time arrived when the profession and the general public should carefully study this question?

A generation ago the number treated in hospitals and dispensaries was less than one-tenth of the population. Twenty years ago a committee of the Philadelphia County Medical Society found that the abuses of the public clinic were so serious that they fancied that it would only be necessary to demonstrate them to the profession and the public in order to have them promptly remedied. To make such a demonstration the committee prepared a long list of instances in which persons, each owning real estate worth thousands of dollars, had applied for free treatment at the clinics. But let us suppose that the committee of that day was entirely mistaken about the abuse of medical charity, and that no such abuse then existed. Let us suppose that the amount of pauperism in Philadelphia has really doubled in the last twenty years; still this will account for only one-half of the 400,000 applications for medical and surgical relief made last year at the free clinics of Philadelphia.

The above extract from the Philadelphia Polyclinic shows that physicians as well as pharmacists are beginning to oppose the outgrowths of the free dispensary system.

In Memoriam.

Georg Dragendorff.—In the night of April 7th to 8th, Dr. G. Dragendorff, emeritus professor, died suddenly in Rostock, his native town. He was born April 20, 1836, as the son of a physician. Having completed his general education, he entered a pharmacy as apprentice in 1856. In 1858 he passed the state examination as apothecary. During the years 1858 to 1860 he was in Heidelberg and from 1860 to 1862 he acted as assistant to Professor Fr. Schultze in the chemical laboratory in Rostock. He then accepted an editorial position in connection with the Pharmaceutische Zeitschrift in St. Petersburg. In 1864 he was elected Professor of Pharmacy and Director of the Pharmaceutical Institute at Dorpat, in which position he was active for nearly thirty years. From 1883 to 1887 he was Prorector at the university.

In recognition of his services the University of Munich honored him with the doctor's degree. The Russian government bestowed several decorations and honorary titles upon him. He was corresponding or honorary member of nearly 450 learned societies.

At the time the University at Dorpat was made Russian (Jurjew), Dragendorff retired to his native town in Mecklenburg. He is the author of several scientific works. His last literary undertaking, Heilpflanzen der verschiedenen Völker und Zeiten, was recently noticed in the columns of this journal (p. 19). This book may not be completed, for it is stated that death overtook him, while engaged upon this work.

History.

Scheele and the Discovery of Oxygen. — Kahlbaum and Hoffmann in their monograph, which is reviewed on p. 250 of this issue. in the course of their discussion of the manner in which Lavoisier's theory was received in Sweden, incidentally call attention to the injustice that is so often done to Scheele by mentioning Priestly as the first discoverer of oxygen. They give several abstracts from the laboratory notes and correspondence of Scheele which clearly show that the great Swedish chemist prepared oxygen in 1771—1772 and tested it with reference to its principal properties. They also show that Priestly made his discovery several years later, viz. in 1774 and that the latter's claim for priority are due to the fact that although Scheele's "Abhandlung von Feuer und Luft" was ready in 1775, it was was not published before 1777, because of the negligence of his publisher.

In order that the reader may obtain a better idea of Scheele's style,

Carl Wilhelm Scheele.

the following abstract from his laboratory notes, also that from his letter to Gahn are reproduced in German. Both abstracts also give a fair idea idea of the chemical terminology in use at that time.

The laboratory notes during his stay in Upsala in 1771—1772 contain the following statement: "Solutio argenti in acido nitrico mit alcali fixo crystallisato präcipitirt, edul-

coriert und destillirt giebt, wenn die Retorte nur recht heiss geworden, aërem fixum und die Hälfte Vitriolluft." (Nordenskiöld, Karl Wilh. Scheele, p. 460.)

That he uses the term "Vitriolluft" synonymously with "Feuerluft" which he employed later becomes

füllt sich die Blase mit einem Gase, welches bei der Untersuchung sich als aus aere fixo und aus einer Luft bestehend erweist, die nicht vom Wasser absorbirt wird, und in der das Feuer ziemlich klar brennt, diese ist die vorerwähnte Feuerluft."

At that time Scheele also succeeded

Scheele Monument at Stockholm.

apparent from a passage in his "Abhandlung von Feuer und Luft", in which he describes oxygen and its preparation more fully: "Wenn man einen aus einer Lösung in acido nitrico gefällten Silberkalk in einer kleinen Glasretorte, welcher eine zusammengedrückte Blase vorgebunden ist, mittelst Wärme ohne Zusatz von Phlogiston reduzirt, so

in eliberating oxygen from mercuric oxide, magnesium nitrate and salpetre. In 1776 (?) Scheele complains to Gahn: "Bergmann schreibt, dass in England Versuche mit einem grossen Brennglase im luftleeren Raum auf unterschiedliche Körper angestellt worden sind. Sie haben da Luft erhalten, in welcher die Animalia gelebt haben und Feuer

brennen konnte, z. B. von mercurio praecipitato rubro, von mercurio calcinato per se, von allen Bleikalken, von calce vitriolata, von Kalk mit Salpetersäure angefeuchtet etc. Sollte mich dieses nicht ärgern können? Sie stimmen mit meinen Versuchen, so ich mit Feuer gemacht, gänzlich überein. Nach diesem kann man sagen, wenn meine Erfahrungen einmal gedruckt werden, dass ich sie von den Engländern genommen und nur etwas verändert habe. Und dafür habe ich blos Swederus zu danken."

Bibliography.

F. Vieweg & Sohn publish Prof. J. H. van't Hoff's Vorlesungen über theoretische und physikalische Chemie, of which the first part has appeared.

Those who have frequent occasion to consult the Proceedings of the German Chemical Society will be pleased to learn that a third general index, covering the years 1888—1896 is in course of preparation.

In the monograph, Die Einführung der Lavoisier'schen Theorie im besonderen in Deutschland, Kahlbaum and Hoffmann (see p. 250) call attention to the fact that Kirwan's Essay on phlogiston (1787), which was directed against Lavoisier's "antiphlogistic hypothesis," as he calls it, was translated into French by Mde. Lavoisier.

A Sketch of Russel H. Chittenden giving not only a biographical account of the subject of the sketch, but also a brief history of the early development of physiological chemistry in this country with which Professor Chittenden is intimately connected, will be found in the May number of Appleton's Popular Science Monthly. A portrait accompanies the article.

Those who are interested in the personality of M. Berthelot, one of the great living chemists of France, will be pleased to learn that the correspondence between him and Renan, which first appeared in the Revue de Paris, has more recently been issued in book form. The published correspondence certainly throws new light upon the character of the man as well as upon his philosophical and historical tendencies. A review of the work appeared in No. 1713 of the Nation.

The Agricultural Department has published a new edition of American Ginseng: its commercial history, protection, and cultivation, by George V. Nash. The revision was made by Maurice G. Kains. Those interested can procure a copy of this illustrated pamphlet of 32 pages for five cents.

CATALOGUES RECEIVED:—

J. B. Baillière & Fils — Paris. Revue mensuelle de bibliographie médicale. No. 3.

Lemcke & Buechner—New York. Montly Bulletin of World Literature, April, 1898, No. 4.

U. S. Dept. of Agr.—Washington. Montly list of publications, April, 1898.

Commercial.

CATALOGUES & PRICE-LISTS RECEIVED:

Druggists Circular — New York. Price List, May, 1898.

Fritzsche Bros. — New York. Wholesale Price List, May, 1898.

SUPPLEMENT.

Universities and Colleges.

Notes.

According to the Paris correspondent of the C. & D. the President of the Paris Society of Pharmacy, M. Bourquelot announced at a recent meeting that a new Paris University degree of Doctor of Pharmacy had been decided on. The qualifications requisite for candidacy are not mentioned.

The University of Jena has decided that students of medicine shall henceforth be required to pass a satisfactory examination in psychiatry before receiving permission to practice their profession. A thorough knowledge of the diseases of the mind is now deemed quite as necessary to the physician as practical skill in treating physical maladies.

University of Minnesota.—According to the Bulletin of Pharmacy the Regents of the University of Minnesota have decided to replace the present doctor's degree by the degree of Pharmaceutical Chemist. Besides, graduate courses will be offered leading to the master's degree and also to the doctor's degree.

University Reform in France.—During the past few years the Review has repeatedly called attention to the awakening in England to the important role played by the German universities not only in the scientific and literary, but even in the commercial and industrial worlds. American manufacturers in recent years have learned to make good use of the power that lies dormant in a thorough university education. There is scarcely a large pharmaceutical or chemical factory which does not employ one or several chemists who have received their education at German universities. Indeed, not a small percentage of these is German by birth. The influence this fact has had in bringing about university reform in France is mentioned in connection with other factors in a communication by Theodore Stanton under the above title to The open court. It is significant to note the commercial turn the argument has taken in France as well as in England. We quote the following paragraph: "Antipathy to Germany, or perhaps it would be more correct to say, a desire to check the growth of Teutonic influence abroad at the expense of French influence, also contributed not little to bring about this reform. Not long ago the Paris Temps contained a leading article, believed to be from the pen of M. Liard, pointing out that German universities conferred such a degree [viz. the degree of doctor of philosophy—Ed.], that without it foreigners and 'especially Americans'—one of the many examples of the important part played by our university element in this campaign—will not attend French seats of learning, and that, finally, our countrymen returning to the United States with a German parchment, give a Teutonic bent to the rising generation across the Atlantic, until German books, scientific instruments and ideas flourish there to the exclusion of those of French origin. 'Make inquiries,' the

writer goes on to say, among our publishers of our scientific works, in our shops where surgical instruments are sold, in our pharmacies, and among the industries connected therewith, and ask how many books, instruments and remedies are sent to America. You will be told that the amount is almost insignificant. What is the cause? The indirect reason, we are led to infer, is the absence in the French universities of a doctor's degree for foreigner , with the consequences arising therefrom."

CATALOGUES RECEIVED:—

Buffalo College of Pharmacy—Buffalo, N. Y. Thirteenth annual announcement. Session of 1898—99.

Indiana University—Bloomington. Catalogue 1897—'98.

Northwestern University—Chicago. Circular of Information of the School of Pharmacy for 1898—99.

University of Wisconsin—Madison. Special Announcement of the School of Pharmacy for 1898—99.

Scientific Societies.

Arkansas Pharmaceutical Association.—The annual meeting was held at Little Rock, May 11 and 12. Two new members, one from Arkansas and one from Mo., were admitted. But one paper was read and this on the subject "Why am I not a member of the A. Ph. A." The President, Secretary and Treasurer were re-elected. The names of the respective officers are J. F. Dowdy, J. B. Bond, Jr., and J. A. Imngkind, all of Little Rock. The next meeting will be held at Hot Springs, beginning on the Second Tuesday in May.

Missouri Pharmaceutical Association.—The twentieth annual meeting of the association was held at St. Louis for five days commencing June 7. Twentythree new members were elected and 123 names were dropped from the list for non-payment, of dues. Yet the association was reported in good financial standing by the Treasurer and a motion to reduce the membership fee from $2.00 to $1.50 was lost.

Sixteen papers were presented, mostly on commercial topics. Legislative matters were also discussed, among them the report of the Committee on Education and Legislation of the Am. Pharm. Assoc. The following officers were elected: President, T. A. Moseley, Harrisonville; Vice-Presidents, C. S. Wright, Webb City; Theo. F. Hagenaw, St. Louis; and Miss F. Dewyl, Jefferson City; Treasurer, Wm. Mittelbach, Brownville; Secretary, H. M. Whelply, St. Louis, and Ambrose Mueller, Old Orchard, as assistant; Local Secy., A. Brandenberger, Jefferson City. The next annual meeting will be held in Jefferson City, beginning on the first Tuesday in June, 1899.

American Pharmaceutical Association.—The Chairman of the Scientific Section has recently issued the following circular to the pharmaceutical press of this country and of Canada as the most convenient form of reaching all the members of the association and others who may desire to contribute to the success of the section:

"In order that the members of the American Pharmaceutical Association may derive the greatest possible benefit from the papers to be presented before the Scientific Section at

the Baltimore meeting of the Association, the committee charged with the work of the Section desires to m ke the following announcement:

1. Committees in the past have not always been able to arrange the programs to their own satisfaction or that of others, largely because many persons who desired to present papers did not send to the Committee the necessary information. The Committee for 1898, therefore, requests that an abstract of each paper to be read before the Section be sent to the Chairman on or before August 15th Inasmuch as an abstract can be prepared even before the paper is in final shape for reading or publication, this request does not seem to involve any hardship or injustice. In arranging the program, preference will naturally be given to those papers whose authors have complied with this request.

2. Authors of papers are further requested to state on the abstract how much time they will require for a satisfactory presentation of their subject. By adhering strictly to the 10 minute rule, some authors have had time to read their papers twice within the allotted time, whereas others with broad subjects were hampered in their presentation through lack of time, even if the time allotted according to rule by the chairman was graciously extended by the section. In the presentation of papers authors will please bear in mind that a more general presentation of many subjects is of greater value to a mixed scientific audience than a discussion of a host of details, which, though very valuable, may interest only very few.

3. The object of scientific gatherings is not so much to read papers, for they can be read more satisfactorily at home when in print. The principal object of such gatherings is to bring men interested in related lines of work together for expression and exchange of opinions, both formal and informal. It lies within the province of the council to see that sufficient time is left between the sessions to permit the latter. It is the duty of the section committees to see that the former is possible. The Committee on the Scientific Section, therefore, desires to urge persons who have papers to read, whenever possible, to consider their presentation as an introduction to a more general discussion: i. e. to omit unessential details in the oral report, so that greater emphasis may be laid on the outline of the work accomplished, thus evoking if possible a discussion by others. It will aid the Committee greatly if authors will mention on their abstracts the name or names of members of the Association who are sufficiently familiar with their work to participate in a discussion, that they may be notified beforehand that the subject will come up for such discussion.

The Committee is fully aware that this cannot apply in all cases, and that all papers cannot be treated alike. It hopes, however, that all members interested in the work of the Section will assist the Committee in making its sessions as profitable as possible."

The Committee on Scientific Papers for the Baltimore meeting to be held August 29th to September 12th consists of Edward Kremers, Madison, Wisconsin; Albert B. Lyons, 72 Brainard Str., Detroit, Mich.; Alfred R. L. Dohme, Cor. Howard and Pratt Sts., Baltimore, Md.

Scientific News.

The Discovery of Liquid Hydrogen. — The statement in the press that Prof. Dewar of London had "discovered" liquid hydrogen and had prepared as much as a wineglassful has caused much discussion for two reasons. Some consider the achievement a remarkable one and anticipate important new discoveries from observations at the exceedingly low temperatures thus made possible. Others have found fault with the "yellowness" of the early meagre statements concerning the "discovery," claiming that hydrogen had been liquified long ago, that the difference between Prof. Dewar's product and that of earlier experimentors existed principally in the quantity produced.

At first thought it may seem strange that any confusion concerning the liquefaction of hydrogen should exist. A casual glance at some of our larger handbooks will possibly make us more lenient with editors and others who have been printing more or less conflicting statements. Ernst Schmidt in his Pharmarcentische Chemie [1893], I, p. 109, states that "under heavy pressure and at a low temperature, hydrogen has successfully been converted into a steelblue, untransparent liquid." In a foot-note he gives the further detailed information: "On December 31, 1877, Cailletet strongly compressed hydrogen gas. Upon rapid expansion fine nebulae of liquid hydrogen became visible. On Jan. 9, 1878, Pictet of Geneva succeeded in liquefying hydrogen at a temperature of —140° and under a pressure of 600 atmospheres in an iron flask. Upon opening the facet, a steelblue, untransparent stream of liquid hydrogen was forced out. This was accompanied with many interruptions which led to the conclusion of the formation of solid hydrogen in the exit tube."

As late as 1883, about five years after these experiments, Roscoe and Schorlemmer (Vol. I, p. 104), make the following statement: "Hydrogen has not been liquified by pressure, although Andrews exposed this gas to a pressure at which it was reduced to 1/500 of its original volume without any observable change occurring, whilst Natterer brought the pressure up to no less than 2790 atmospheres with like result."

Richter, in the sixth edition (1889) of his Inorganic Chemistry (p. 33) makes the following statement: "Of all gases, hydrogen is the most difficult to liquify, inasmuch as it has the lowest critical temperature, about —180°. By compressing hydrogen at a temperature of —150° under 650 atmospheres, Pictet obtained, upon opening the stop cock of his compression apparatus, hydrogen in the form of a steelblue stream of a liquid which evaporated rapidly.

According to Cailletet's method of compression, by rapidly releasing the pressure of the compressed gas, Cailletet and Wroblewsky obtained hydrogen in the form of grey nebulae. On the other hand, according to Olczewsky, compressed hydrogen, mixed with compressed oxygen, constitutes a colorless liquid.

With such conflicting statements in our standard works, due no doubt in part to a different interpretation of the same experiments, it is not surprising that the daily press, trade journals etc. are not in position to

pass judgment upon the claims of Prof. Dewar. In this connection it will be of interest to quote Prof. Dewar's own words with regard to his achievement, made at the annual dinner of the British Pharmaceutical Society in the course of a response to a toast. Referring to an allusion by the toastmaster to his recent accomplishment he said: "But that is something that you must not exaggerate. We have got to weigh seriously to whom belongs the credit of a discovery; for discoveries are such that the one might be accidental, and the other the result of long trial along beaten lines. So it will not do to exaggerate, and we must give due credit to patient work. In time, no doubt, we shall get to the North Pole, and so, too, we shall one day get to the zero of absolute temperature, but what that may be I do not know, nor can I say what result we may get from the discovery. I may tell you that the research in which I have been engaged has cost the Royal Institution an enormous sum of money; indeed a foreign friend told me not long ago, that this expenditure is quite unique, and that it would be impossible to carry on such a research on the continent without government support. I think that due recognition should be given to the Royal Institution's devotion to the true interests of science in encouraging this particular research."

Another New Element. — The achievement of preparing palesful of liquid air in New York has scarcely been overshadowed by the preparation of a wineglassful of liquid hydrogen when our attention is once more directed to the possibilities of liquid air by the announcement of the discovery of a new element. It is reported that Prof. Ramsay, the joint discoverer with Lord Rayleigh of argon, has eliminated from the atmosphere a new gas, which he calls crypton. The new element is obtained by evaporating large quantities of liquid air. It is transparent and heavier than argon, and like the latter is inactive. It exists in the atmosphere in the proportion of 1 to 20,000. Its chief lines in the spectrum are green and yellow. The latter is nearly coincident with the helium yellow line, D_3.

In its preparation 750 cc. of liquid air were reduced by evaporation. A residuary gas was thus obtained which was deprived of its oxygen and nitrogen. There remained 26 cc. of a gas which presented, besides a weakly defined spectrum of argon, an additional spectrum then unknown.

Prof. Berthelot is reported to have read a communication received from Prof. Ramsay before the Academy of Sciences.

According to the late reports several English and French chemists claim to have made the same observation before Ramsay. Prof. Ramsay has also been criticized for having communicated his observations to the French Academy before having reported his "discovery" to the Royal Society.

Bibliography.

According to the Bulletin of Pharmacy, H. N. Ridley, Director of the Royal Botanic Gardens at Singapore, has published in the Journal of the Straits, Branch of the Royal Asiatic Society,

a very complete list of Malagan plant names, giving under each the botanical name, natural order, and a short note descriptive of the plant and of the origin and application of the name.

The Bibliographie botanique appears in five monthly fascicles of 32 pages, the fourth fascicle having appeared in May. This bibliography is sent by J.-B. Baillière et Fils (19, rue Hautefeuille) of Paris to all who are willing to pay for the postage. The same firm has in course of publication a Dictionnaire de l'Industrie by Julien Lefèvre, professor at the School of Science at Nantes, that will be of special interest to chemists working along applied lines. Of the Encyclopédie de chimie industrielle they have thus far published twenty six volumes.

The announcement is made by William M. Warren of Detroit that in the future he expects to concentrate his attention as publisher to his journals The Therapeutic Gazette, Medicine, The Medical Age, and The Bulletin of Pharmacy. He therefore offers for sale his entire stock of books at actual cost, or an average of about 18 cents per volume. Among the list are some that ought to be of interest to the pharmacist though they are all of a medical nature.

John Wiley & Sons of New York are early in the field with new text-books on chemical subjects. 1. A laboratory guide in qualitative chemical analysis by H. L. Wells, Professor of Analytical Chemistry and Metallurgy in the Sheffield Scientific School of Yale University; 2. A short course in inorganic qualitative analysis for engineering students by Dr. J. S. C. Wells, Instructor in Analytical Chemistry, Columbia College; and 3. A manual of quantitative chemical analysis by E. F. Ladd, Professor of Chemistry in the North Dakota Agricultural College.

No one questions any longer the great progress which the natural sciences have made during the past century. This progress has become well nigh axiomatic. And yet with the very best and latest information there is often coupled in modern scholars an absense of the historic sense, a lacking of the knowledge of those master pieces of scientific research upon which the modern edifice of science rests. In order to supply this want, Professor Ostwald of the University of Leipzig began the publication of the Klassiker der exakten Wissenschaften in 1892. These reprints from various sources which as a rule are not readily accessible to most students have so far, in ninety five numbers, covered the realm of mathematics, anatomy, physics, chemistry and physiology. The publishers, Wilhelm Engelmann of Leipzig, now announce that hereafter the emeritus professor, Dr. Arthur von Oettingen of Leipzig will assume the general editorship in place of Professor Ostwald who, however, will retain general charge of the chemical division of the work. The other divisions are also in charge each of prominent specialists. The undertaking merits the widest and most liberal support.

Wonderland '98 is an exceedingly attractive manual published by the Northern Pacific Railway. The

numerous half tones are of excellent quality illustrating bits of scenery of mountain and forest, of lake and river. Harvest scenes and mining operations, commerce and the land marks of a higher civilization: public libraries and elegant school buildings will no doubt be a revelation to the Easterner who knows only of two attributes of the West, viz. wild and wooly. The varied pictures of the western wilds and of a new European civilization are sufficient to awaken a "Wanderfieber" even in the most callous business or professional man who finds so little time for the pleasures of nature and the study of mankind. Perfect as most of the half tones are, the colored frontispiece, "The first touch of frost," a scene rom the Flathead Reservation, Montana, surpasses them all in naturalness and charm. A chapter on Alaska and the Klondike brings this year's annual up to date. If it only required as many dollars or even eagles to make a trip through 'wonderland" as it costs cents (viz. six) to secure the annual and make a mental tour through a vast extent of our country of which most of us are ignorant, there would, no doubt be many more to cause to be realized their dreams of travel through "wonderland."

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Coleman, T. E. Price-book for approximate estimates for architects, engineers, builders. Oblong 16mo, limp cloth..... .80
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SUPPLEMENT.

Universities and Colleges.

University of Michigan.—The fifty-fourth annual commencement was held Thursday, June 30. The School of Pharmacy graduated eighteen students with the degree of Pharmaceutical Chemist and two with the degree of Bachelor of Science (in Pharmacy).

Northwestern University.— It is the hope of the University to lengthen the course for the degree of Graduate in Pharmacy as soon as circumstances permit. As a preliminary step in this direction, a senior course in the fall and winter, occupying six months, is now offered.

Students prepared to enter upon their senior course for the degree named will accordingly be admitted this year and each year hereafter on the first week-day in October, and the course beginning at that time will continue until the ten h day of April.

The next step in lengthening the course for the degree of Graduate in Pharmacy will be a similar extension of the junior course and the discontinuance of the admission of senior classes in February.

University of Wisconsin. — The The forty-fifth commencement of the University, the fifteenth of the School of Pharmacy, was held Thursday, June 23. Nine candidates received the degree of Graduate in Pharmacy, three graduating from the two years' course and six from the three years' course. Besides five candidates received the degree of Bachelor of Science (in Pharmacy). One feature of commencement week of special interest to pharmacists consisted in the presentation of a portrait of the late Mr. John A. Dadd by his son Robert Dadd of Milwaukee.

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Philadelphia College of Pharmacy—Philadelphia, Pa. Seventy-eighth annual announcement 1898.

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University of Texas Dept. of Medicine — Galveston, Texas. Catalogue 1897—98.

Scientific Associations.

American Pharmaceutical Association. —The following programme for the Baltimore meeting has been announced:

Monday, August 29.—11.' 0 A. M. Meeting of Council. 3.00 P. M. First General Session. 8.30 P. M. Reception of visiting members, delegates and ladies, to be followed by concert and hop.—Tuesday, August 30.—10.00 A. M. Second General Session. 4.00 P. M. Carriage ride to points of interest and through Druid Hill Park. 8.00 P. M. Meeting of Commercial Section.—Wednesday, August 31.—All day ride on the Chesapeake, including visit to Naval Academy and historical rooms of the State House at Annapolis. Meals to be served en route.—Thursday, September 1.—10.00 A. M. First session of Scientific Section. 3.00 P. M. Second session of Scientific Section. 8.00 P. M. Third session of Scientific Section.—Friday, September 2. 10.00 A. M. First session of Educational and Legislative Section. 3.00 P. M. Second session of Educational and Legislative Section. 7.00 P. M. Trolley-car ride through city and to entertainment at Electric Park. — Saturday, September 3.—10.00 A. M. Third session of Educational and Legislative Section. 3.00 P. M. Third general session.

Social features to be complimentary; tendered visiting members, delegates and ladies by drug trade of Baltimore. In addition the following subscription excursions have been proposed by the local committeee: Monday, September 5.—To Gettysburg Battlefield and Blue Ridge Mountains.—Tuesday, September 6. —To Washington and Mount Vernon.

American Association for the Advancement of Science.—The first general session will be held at 10 A. M. Monday morning, Aug. 22, in Huntington Hall. During the afternoon the addresses of the vice-presidents of the nine sections will be delivered in the various places of meeting assigned to the different sections. In the evening the retiring President, Professor Wolcott Gibbs of Newport, R. I., will deliver his address "On some points in theoretical chemistry."

On Tuesday and Thursday the sections will meet. Wednesday will be Salem day and Friday Cambridge day. On Friday President Eliot of Harvard will deliver an address in Sanders Theatre. The general closing session will be held Saturday morning, and the concluding meetings and adjournment of the sections will take place in the evening, the afternoon being devoted to excursions to either Wellesley College or Lexington and Concord. Excursions to the White Mts., Cape Cod and other places are arranged for the following Monday, Aug. 29.

The following preliminary programme is announced for Section C, — Chemistry. — Monday, Aug. 22. After the general session in the morning the section will be organized in room 35 of the Walker Building of the Massachusetts Institute of Technology. In the afternoon the address of the Vice-President, Dr. Edgar F. Smith of the University of

Pennsylvania will be delivered. — Tuesday, Aug. 23. — (Under the auspices of the American Chemical Society) Morning, Analytical Chemistry led by Dr. P. DeP. Ricketts, Columbia University. Afternoon, teaching of chemistry, Dr. F. P. Venable, University of North Carolina. — Wednesday, Aug. 24. — Excursion to Salem as guests of the Essex Institute. — Thursday, Aug. 25. — Morning, inorganic chemistry led by Dr. H. L. Wells, Yale University. Afternoon, organic chemistry, Dr. Ira Remsen, Johns Hopkins University. Evening, physical chemistry, Dr. T. W. Richards, Harvard University. — Friday, Aug. 26. — Cambridge Day. Afternoon (in one of the Harvard University rooms) Physiological chemistry led by Dr. E. E. Smith, New York. — Saturday, Aug. 27. — Morning, agricultural chemistry led by Dr. H. A. Weber, Ohio University. Afternoon, technical chemistry, Dr. N. W. Lord, Ohio State University. The places of chemical interest to be visited in the afternoon excursions will be announced by Dr. H. P. Talbot, Secretary of the Local Committee.

Section G.—Botany—has issued a preliminary programme announcing as many as thirty-two papers to be read beginning Tuesday. The subject of Vice-President Farlow's address is "The conception of species as effected by recent investigations on Fungi."

Society of Chemical Industry. — The first general meeting of the society was held in London under the presidency of Sir Henry Roscoe. The society was then only three months old, and numbered about 300 members. To-day it has a membership of 3200 divided among eight local sections, including New York with about 600 members. The society's medal was presented to Dr. W. H. Perkin, well-known as an investigator of natural and artificial colors. From the Presdent's, Professor Frank Clowes' address, we quote the following section pertaining to some technical matters:

"Living for upwards of twenty years as a teacher in mining districts, my attention has been constantly directed to the improvement of scientific methods applied to coal-mining, and more especially to methods at once delicate, exact, and trustworthy, for detecting and measuring the fire-damp or methane in the air of the mine. Careful experiments, which were widely extended both in the laboratory and in the coal-mine, led me to infer that no simple and practicable method equalled in these respects the hydrogen flame when safely and suitably applied. The "flame-cap" over the standard hydrogen flame, as it is seen in the suitably-fitted safety-lamp, not only detects, but measures the fire-damp with great precision. This standard test-flame has since been adapted to the detection and measurement of coal gas in air, and, in conjunction with Mr. Boverton Redwood, I have applied it also to the detection and measurement of petroleum vapor in the air. A full summary of our work in these directions, which includes and somewhat extends our papers which have appeared in the Journal of this Society, appears as a monograph published by Messrs. Crosby Lockwood & Son under the title of the "Detection and Measurement of Inflammable Gas and Vapor in the Air."

"The new illuminant, acetylene, has claimed in some measure in recent years the attention of most of us. It cannot be maintained that acetylene is a newly discovered gas, or even that the material from which it is now produced is new to science. But it may certainly be claimed that the cheap production on the large scale of the calcium carbide, from which acetylene is most economically prepared, is a recent discovery. And it is this discovery which has brought acetylene to the front as a possible and powerful illuminant. An inspection of the flame of acetylene, when it is suitably produced from an appropriate burner, is sufficient to satisfy anyone that it is most desirable to secure the service of this brilliantly burning gas. Apparently the general adoption of acetylene for illuminating purposes is being delayed by the feeling that the gas is dangerous, and there certainly are not wanting instances of dire disaster arising from its preparation and storage.

"In the liquid condition acetylene can undoubtedly, owing to its endothermic character, undergo most violent explosive decomposition, yet Raoul Pictet strongly urges that the liquid is safe if it is suitably prepared and stored. In the gaseous form we are assured by Vivian Lewes that the gas does not undergo this explosive decomposition when it is stored under a pressure less than two atmospheres. Lewes further states that this gas may be burnt in such a way, if it is properly prepared, as not to rapidly cause obstruction in the burners—a difficulty which has caused trouble in the past; he further states that while it is not of use for enriching coal gas, it is a valuable enricher of oil gas.

"It is to be hoped that the public may ultimately receive satisfactory assurance that they can employ acetylene as an illuminant with success and safety under suitable conditions. It will be remembered that other endothermic substances, such as nitro-glycerin or dynamite, and nitro-cellulose or guncotton, have now attained this desirable condition, after having in the past worked such disaster as to cause them to be looked upon by the public as hopelessly unsafe. It must be remembered in any case that acetylene when mixed in very small proportion with air furnishes an explosive mixture, but danger arising from this cause must certainly be looked upon as preventable.

"The enrichment of coal gas, which it was hoped might have been effected by acetylene, is now usually secured by the indirect employment of water gas. The large amount of poisonous carbon monoxide which is thus introduced into the enriched gas has naturally led to apprehension, whilst the use of carburetted water gas has certainly given rise to serious loss of life. The substitution of a comparatively non-poisonous and highly illuminating gas, such as acetylene, for enriched coal gas may be one of the solutions of the attempt to furnish the public with gas of high illuminating power.

"Those who are interested or concerned in another important problem of applied science—the disposal of our town sewage—will watch with interest the development in recent years of the process of treatment of sewage by artificial filtration through coke or other suitable substances.

This filtration is known to secure the oxidation of the putrescible matter of the sewage indirectly through the intervention of bacteria. Perhaps the nearest parallel cases are the change of sugar into alcohol and carbon dioxide under the influence of the yeast cell; followed by the production of vinegar from the alcohol of malt liquor or "must," under the influence of the *mycoderma aceti*, which has long been known to be the organism necessary to transfer the atmospheric oxygen to the alcohol. Indeed, just as it is found necessary that the saccharine liquid shall be sown with the yeast cells, and the alcoholic liquid shall become sown with the *mycoderma*, before alcoholic fermentation and acetification can take place with rapidity; so it is found that the bacterial filter for sewage must become infected with the bacteria necessary for the liquefaction of the suspended organic matter of the sewage, and with those suited to effect the oxidation of the dissolved organic substances, before it is in a condition to purify the sewage. In experiments conducted on the small scale, a double filtration of raw London sewage through two small coke bacterial filters has in this way effected upon the raw sewage a purification of 95 per cent. It is hoped and anticipated that experimental filters of a similar kind, but on a larger scale, which are now being started, may produce a similarly successful result, and that their action may be continuous and permanent."

Massachusetts Pharmaceutical Association.—The annual meeting was held in Greenfield, June 14, 15 and 16. In his address, the president urged the necessity of having a laboratory in which the State Board could conduct more thorough and practical examinations. He called attention to the fact that the increase in the number of drug stores had been less than the increase in population during the last five years, and expressed the opinion that this would be equally true during the next ten years, also that the demand would become greater for better educated men, thereby meaning men with college training.

The association has a membership of 564, and appears to be well situated financially. $50.00 could be allowed the committee on adulteration which made an elaborate report showing that in the Bay State like in other states much remains to be desired in the way of purity of drugs and chemicals. $100.00 could be added to a small permanent fund, now almost $500.00.

Professor Scoville delivered an evening lecture on The modern developments in perfumery. The following papers were also read: 1. Marion Cowan, The results of an examination of market samples of kamala and elm; 2. C. F. Nixon, Suggestions relative to official syrups; 3. M. Cramer, Is it desirable to favor the suggestion to restrict the sales of liquor by pharmacists to prescriptions only?; 4. A. H. Benhard, Is the use of wood alcohol in liniments and as a solvent increasing?; 5. W. W. Bartlet, Restrictive legislation; 6. H. Copleston, Pills; 7. Professors H. La Pierre and Wilbur L. Scoville presented the results of work done by students under their direction at the Mass. College of Pharmacy.

The following officers were elected: President, J. J. Curran of Holyoke;

Sec'y., J. F. Guerin of Worcester; Treas., Thos. B. Nichols.

Minnesota Pharmaceutical Association.—The annual meeting was held June 15 and 16 in St. Paul with abont fifty members in attendance. The secretary's report shows a membership of 296. St. Paul has about 67 and Minneapolis, only ten miles away, abont 94 drug stores.

The report of the State Board of Pharmacy showed that of 204 men examined during the year, only 45 received certificates as registered pharmacists, and 41 as assistant pharmacists. The association voted to have that section of the state law which deals with the recommendations of the association for membership on the Board amended in conformity with the decision of the Supreme Court. Prof. Wulling reported that the College of Pharmacy of the State University had 51 students during the past year and was making satisfactory progress in all directions.

The following papers were read: 1) H. H. Mayer, a. Our condition; b. Trade usages; 2) F. J. Wulling, a. Clinical microscopy; b. Preservation of nutmegs; c. Mercurial ointment; d. On powdered drugs; 3) J. W. Harrah, Trade interests; 4) H. W. Reitzke, Sound policies in buying goods; 5) R. F. Lynch, The American Pharmaceutical Association; 6) Whitaker, On taking inventories; 7) C. S. Burrows in his paper opposed a law giving licenses to those only who had taken a college course.

The following officers were elected: President, Charles T. Heller of St. Paul, who had been secretary for seven years; Secretary, Henry Rauch of Minneapolis; Treasurer, H. W. Reitzke. The convention ended with a banquet.

The correspondent of the Era ends his report with the following brief but suggestive paragraph: "Simultaneously with the pharmaceutical, and in the same building, the State Capitol, the State Medical Society held the most largely, and in many respects most interesting convention in its history.

Bibliography.

The description of the Merck Pharmacy by William C. Alpers is continued in the Report for June 15. The percolating stand, the elegant range and the still are illustrated and described in detail.

The Open Court Publ. Co. of Chicago announces an English translation of Hueppe's Wissenschaftliche Einführung in die Bakteriologie, a general work on the subject of bacteriology which is of value to the educated laity as well as to the bacteriological specialist. For a review of the German edition see vol. 14, p. 292.

Fr. Eugen Köhler, Gera-Untermhaus, the publisher of the well-known Köhler's Medicinalpflanzen, announces Max Schulze's work, Die Orchidaceen Deutschlands, Deutsch-Oesterreichs und der Schweiz finely illustrated with 92 colored plates besides others not in colors, at the greatly reduced price of M. 6.00 unbound or M. 7.50 bound. This work when sold at double this price met with a large scale and was very favorably received by botanists. The sample plate accompanying the prospectus is of a high order of merit.

M. Krayn or Fischer's technologischer Verlag of Berlin W. have just issued a Handbuch für das physiologisch-chemische Laboratorium, a translation of the work by Prof. John M. Mandel of New York.

Plant Life, a new text-book of elementary botany from the pen of Dr. Charles R. Barnes of the University of Chicago, late of the University of Wisconsin, has just appeared from the press of Henry Holt and Co., New York. It is illustrated with 415 cuts and contains about 425 pages.

A new edition of King's American Eclectic Dispensatory is about to appear in two volumes, of which the first is almost ready for distribution. The work is entirely rewritten and enlarged by Dr. Harvey W. Felter, Adjunct Professor of Chemistry in the Eclectic Medical Institute of Cincinnati, also co-editor of Locke's Materia Medica and Therapeutics; and Professor John Uri Lloyd who needs no introduction to pharmaceutical circles in this country or elsewhere. Advance subscriptions, $4.50 and $5.00 (sheep) per volume will be received by the Scudder Brothers Co. (1009 Plum St., Cincinnati, O.)

The Oesterreichische Chemiker-Zeitung und Zeitschrift für Nahrungsmittel-Untersuchung, Hygiene und Warenkunde is a new journal, the first number of which made its appearance May 1. of this year. It is the successor of the Zeitschrift f. Nahrungsmittel-Untersuchung und Hygiene which was first issued in 1887 as a supplement to the pharmaceutical weekly, the Pharmaceutische Post. It, however, intends to cover a broader field than its predecessor by becoming the central organ of all chemical and allied interests of the Austrian Empire. It has already been announced as the official organ of the Society of Austrian Chemists of Vienna. Other Austrian societies also have affiliated themselves with the new publication. Dr. H. Heger, the proprietor and editor, is also one of the secretaries of the chemical congress to be held at Vienna this summer. Complete reports of this congress may, therefore, be expected in the new journal.

The Committee of Revision and Publication of the Pharmacopoeia of the United States of America: 1890—1900, has just issued a valuable bibliographical index of chemical research on Alkaloidal estimation, which has been prepared from original literature for the committee by Paul I. Murrill under the direction of Professor Prescott. It will be remembered that the publication of a similar bibliography of morphine compiled by H. Brown, also under the direction of Prof. Prescott, was begun in this journal last year and completed in the Pharmaceutical Archives.

CATALOGUES RECEIVED:—

A. S. Clark—New York. Catalogue No. 46.

B. G. Teubner—Leipzig. Mittheilungen, 1898, Nos. 2 & 3.

U. S. Dept. of Agr.—Washington, D. C. Monthly list of publications, June 1898.

Oswald Weigel—Leipzig. Botanischer Lagerkatalog.

The following new Books may be secured from the

Geo. Brumder Book-Department, Milwaukee, Wis.

H. C. MAERCKER, MANAGER.

Alpers, W. C. The pharmacist at work ..... $ 1.50
Armstrong, L. Electric Movement in Air and Water. With theoretical inferences. Plates, folio 12.50
Beckurts, H. Analytische Chemie f. Apothcker..... 4.00
Bernthsen. Kurzes Lehrbuch der organ. Chemie. 6. Aufl..... 3.75
Biechele, M. Die chemischen Gleichungen der wichtigsten organ. und anorgan. Stoffe. M. Nachtrag. 2. Aufl.... ..... 4.25
— — Dic gebräuchlichsten Chemikalien f. d. techn., analyt. u. pharmazeut. Gebrauch..... 1.75
Binns, C. F. Ceramic Technology; being some aspects of technical science as applied to pottery manufacture 5.00
Binz, C. Grundzüge d. Arzneimittellehre. 12. Aufl. 2.00
— — Vorlesungen über Pharmakologie 6.00
Borchers, W. Electric Smelting and Refining. Extraction and treatment of metals by means of electric current. 8vo, cloth..... 6 50
Buck, R. C. A manual of trigonometry for young sailors and officers of the merchant navy. cr. 8vo, cloth..... 1.40
Butler, G. F. Textbook of materia medica, therapeutics and pharmacology. Illus. 8vo..... 4.50
Capaun-Karlowa, C. F. Medizinische Spezialitäten, eine Sammlg. aller bekannten medizin. Geheimmittel m. Angabe ihrer Zusammcnsetzg. 3. Aufl. 1.40
Coleman, T. E. Price-book for approximate estimates for architects, engineers, builders. Oblong 16mo, limp cloth..... .80
Clarke, F. W. Constants of Nature, Part 5: a recalculation of atomic weights. 8vo, paper..... 8.40
Clarkson, A. Textbook of histology. Illus. 8vo.... 6.25
Classen, Alex. Quantitative Chemical Analysis by Electrolysis. Third English edition, translated from the Fourth German Edition by W. H. Herrick and B. B. Boltwood. 8vo.....
Crothers and Bice. Elements of Latin; for students of medicine and pharmacy..... 1.50
Dawson, P. Electric Railways and Tramways; their construction and operation. A practical handbook setting forth at length the modern application of Electricity as a motive power for railways and tramways. 503 illus. and 183 tables. 12.50
Dolbear, A. E. Modes of motion: or, mechanical conceptions of physical phenomena. 12mo, cloth... .75
Durst, A. Grundzüge d. Arzneidosenlehre in Bezug auf die innere Anwendung der Heilmittel..... 2.00
Easy Lettering. A De Luxe edition, on heavy plate paper and bound in "Canvoboards", oblong..... .50
Eijndhofen, A. J. Van. A comparison between the French and English methods of ascertaining the illuminating powers of Coal Gas 8vo, cloth.... 1.60
Fothergill, J. M. Practitioner's handbook of treatment; cd. by W. Murrell. 4th Ed..... 5.50
Friedheim. Einführung i. d. Stud. d. qualitativen chem. Analyse. 8. Aufl..... ..... 2.75
Geissler. Grundriss d. pharmazeut. Maassanalvse... 1.35
Hager, H. Handbuch d. pharmaz. Praxis. 3 Bde... 17.00
Hahn, E., & J. Holfert. Spezialitäten und Geheimmittel mit Angabe ihrer Zusammensetzg. 5. Aufl. 1.75
Hall, W. S. Elements of the differential and integral calculus with applications. Cloth..... 2.25
Handbuch f. Pharmazeut. u. Droguisten. I. Band. 2. Aufl..... 1.75
Handwörterbuch der Pharmazie. Herausgegeb. v. Brestowski. 2 Bde..... 22.00
Hansen, A. Drogenkunde..... 1.35
Hanssen, C. J. T. Reform of chemical and physical calculations. 4to, cloth..... 2.60
Hartwich, C. Die neuen Arzneidrogen a. d. Pflanzenreiche..... 4.75
Herzfeld, Beer & Matzdorff. Rcpetitorium f. Chemie, Physik, Pharmakognosie u. Botanik 2.00
Hodgman, F. Surveyor's Tables; being the tables from the manual of land surveying..... 1.50
Holbrook, M. L. Stirpiculture; or the improvement of offspring through wiser generation..... 1.00

Howell, W. H. American text-book of physiology. Illus. 8vo..... $ 6.50
Hutchinson, R. Chemical methods; introd. to the practical study of medicine. Illus..... 3.00
Jahn, E. Arznei-Therapie der Gegenwart. 3. Aufl... 2 00
Johnston, W. J. Electrical and Street Railway Directory for 1897. 8vo, cloth..... 5.00
Jones, R. H. Asbestos and asbestic; properties, occurrence, use. 10 collotype plates and other illus. 8vo..... 6.40
Killebrew, J. B., and Myrick, H. Tobacco Leaf; culture, cure, marketting, manufacture. Illus., 12mo, cloth..... 2.00
Kilpatrick, T. S. G. The Hydraulic Gold Miners Manual, including placer mining and simple rules for the discrimination of gems. Illus., 16mo..... 1.00
Kobert, Rud. Lehrbuch der Pharmakokotherapie. Hlbfrz..... 5.50
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Krafft, F. Kurzes Lehrbuch der Chemie.
1. Anorganische Chemie..... 3.75
2. Organische Chemie 5.75
Levy, M. Repetitorium d. Drogenkunde..... 1.00
Lewin, L. Lehrbuch d. Toxikologie. 2. Aufl..... 4.00
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— — The Treatment of Disease by electricity. Illus... 8.50
Morris, J., and Wilkinson, F. The elements of Cotton Spinning; with preface by Sir W. A. Dobson. 2.50
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— — Grundriss d. anorg. Chemie..... 1.25
Pearman, T. H., and Moor, C. G. The Analysis of Food and Drugs. Part 1.—Milk and milk products. 8vo., sewed..... 2.00
Penzoldt, F. Lehrbuch d. klinischen Arzneibehandlung. 4. Aufl..... 7.50
Pringle, J. J. Pictorial Atlas of Skin Diseases and syphilitic affections; from the French with explanatory wood-cuts and texts. 12 parts. Folio, per part..... 3.00
Remsen. Organische Chemie. 3. Aufl..... 2.00
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Rothwell, R. P. The Mineral Industry; its statistics, technology and trade in the United States and other countries to the end of 1896. Cloth..... 5.00
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II. Band. Organische Chemie..... 13.00
Schulz, H. Die offizinellen Pflanzen und Pflanzenpräparate..... 1.85
Schwanert. Hilfsb. z. Ausführung chem. Arbeiten. 3. Aufl..... 3.25
Taylor. Practical treatise on sexual disorders of the male and female, ill. 8vo..... 3.25
Thoms, H. Arzneimittel d. organ. Chem. 2. Aufl.... 2.00
Waring, H. J. Diseases of the liver, gall, bladder and biliary system. 8vo..... 4.00
Webster, A. G. The theory of Electricity and Magnetism, being lectures on mathematical physics..... 3.50
Wetterstrand, O. G. Hypnotism and its application to practical medicine. 8vo..... 2.00
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SUPPLEMENT.

American Pharmaceutical Association.

Report of the Special Committee on Research.

To the Section on Scientific Papers:

The chairman of the Special Committee on Research begs leave to submit a third annual report.*

The work of the committee through the year 1898—99 has been continued in two main ways by which advancement can be made, namely: 1) in literary research and bibliography, 2) in experimental research by scientific method.

In order to make progress, technical and scientific, it is first necessary to know what facts have been established by others, and it is then a duty to find further facts in extension of knowledge for the uses of man.

In co-ordinating the labors of the several workers in and with the committee, a good deal of correspondence has been carried on, as questions have arisen and as plans have been developed. It has been found, however, that a large part of the work has arisen from the personal plans of the several members of the committee. Some of the purposes are older than the organization of this committee, whose service may be no more than to present results with full justice to their individual authors, in the spirit of utility to the interests of pharmacy.

In Literary Research.

In the bibliography preparatory to experimentation upon the assay of alkaloidal drugs and galenicals, the following work has been written: "*Alkaloidal Estimation: a bibliographical index of chemical research, prepared from original literature by Paul I. Murrill, under direction of Albert P. Prescott. Published and distributed by the Committee of Revision of the Pharmacopœia of the United States, 1890—1900.*" The published methods of quantitative work for alkaloids are here indexed and summarized for the twenty years ending in 1897, with inclusion of a few earlier papers and of the first quarter of 1898. The journal sets and monographs drawn upon number 65, of which the ten most comprehensive publications were searched consecutively through the twenty years ending 1897. There are 326 articles indexed, the highest number in one year being 34 for 1887. In the ten years ending in 1887, there were 138 articles; in the ten years ending in 1897, 167 articles. The articles have been contributed by 212 authors, counting joint authors as one. In nationality the authors appear to have been, in order of greatest numbers, German and Swiss, English, American, French, Russian, Dutch, Italian. Among others contributing the greatest number of articles are: Keller (C. C.), Squibb, Lyons, Beckurts, De Vrij, Dieterich, Flückiger, in about the order named. The eminent writers in analytic chemistry, such as Dragendorff, Hager, and A. H. Allen, have been but moderately prolific of articles in journals on this subject. The alkaloids, on whose estimation the most has been

* For second annual report see Proceedings American Pharmaceutical Association, vol. 45, 1897, p. 172.

contributed are, in order, morphine, alkaloids in general, caffeine, total cinchona alkaloids, quinine, strychnine, emetine. Only twenty-four alkaloids appear in the literature of quantitative analytical work. The order of the bibliography is chronological, with full descriptive titles, references to publications, an index of authors, and one of subjects.

The Chemical Bibliography of Morphine, 1875 to 1896, described in the last report of this committee (Proc. Am. Phar. Assoc., 1897, p. 174) has been published in the Pharmaceutical Review and Archives and distributed in a reprint of sixty pages.

Historical Monographs on Standard Drugs, by John Uri Lloyd, have continued to appear in various avenues, and those of the past year especially should have registration in this report. The Lloyd Library, which has made this literary research possible, is closely related to the bibliographic work of this committee, and is a resource to all its members. In the preparation of these monographs, Mr. C. G. Lloyd is the botanical authority, and Dr. Sigmond Walbott does library work. A series of fifteen of these monographs has been prepared at the request of Mr. G. P. Engelhard, and has appeared in the Western Druggist, volumes XIX and XX. This series includes articles as follows:

Aloe Socotrina, XX, Aug.
Areca Catechu, XX, 195.
Cephaëlis Ipecacuanha, XIX, 346.
Citrullus Colocynthis, XX, 243.
Copaifera officinalis, XX, 54.
Croton Tiglium, XX, 151.
Hydrastis Canadensis, XIX, 59.
Jateorhiza Calumba, XX, 8.
Physostigma venosum, XIX, 243.
Punica Granatum, XIX, 202.
Quassia amara, XIX, 7.
Strophanthus Hispidus, XIX, 403.
Strychnos Nux Vomica, XIX, 109.
Vanilla planifolia, XIX, 548.
Veratrum viride, XIX, 447.

Among others of the historical monographs of the same author have been the following:

Oil of Gaultheria, in conjunction with the investigations of Prof. Kremers, Phar. Review, 1898, p. 176.

The California Manna, following a request of Prof. Flückiger, Am. Jour. Phar., 1897, p. 329; Ber. Deutsch. Phar. Ges., VII, 245.

The Destruction of Tobacco in Virginia, by same request, Am. Jour. Phar., 1897, p. 557.

Note on the History of Percolation, Am. Drugg., 1897, p. 282.

Literature on Capillarity was issued by Professor Lloyd in "A Study in Pharmacy," for private distribution. This is a bibliography of monumental proportions, giving record of 328 works from 1452—1519 to 1872, and to be continued. The titles are made descriptive for the wants of the reader of the present time, and are accompanied with critical annotations by the compiler himself.

The Lloyd Library (to which this Association has contributed) has been increased in the past year by about one thousand volumes of works on botany, pharmacognosy and pharmacy. On January 1, 1898, it contained on botanical subjects 4,619 bound volumes and about 2,000 pamphlets; on pharmacy and materia medica 3,715 bound volumes and about 1,000 pamphlets. Among the rare works lately added are a list of the earlier and less accessible of the pharmacopœias of foreign countries.

In Experimental Research.

On the Volatile Oils. — This extensive field was accepted by Edward Kremers, at the Montreal meeting, as a field in which he had been some time specially engaged, first upon the terpenes in Europe, and afterwards in continued investigations of these and other oils with his students in his own laboratory. The method of work is therefore systematic rather than desultory, and all known results are to be brought to bear upon the very complex and difficult questions of true and safe standards of purity, so as to avoid fallacious requirements. Since the Minnetonka meeting the work in hand has been as follows:

I. Detailed in papers published during the year, by Edward Kremers.

1. Volatile Oils and their Assay (read in abstract at Minnetonka Meeting), Phar. Review, xv. 196.

2. Criticism of a proposed method for the Assay of Senega, *Ibid.*, xvi., 45.

3. On the occurrence of Methyl Salicylate, *Ibid.*, xvi. 100.

4. On the Volumetric Estimation of Methyl Salicylate, *Ibid.*, xvi. 130. (The 2d, 3d, and 4th papers were by Dr. Kremers and Miss M. M. James.) The Oil of Gaultheria, its early pharmaceutical history, by John Uri Lloyd, named among the contributions from literary research, belongs to this series of subjects.

5. Benzinum, U. S. P., *Ibid.*, xvi. 221.

II. Papers in course of preparation for report upon work already done, to be presented, as far as possible at the Baltimore meeting.

1. Monograph on Methyl Salicylate. By Edward Kremers.

2. Monograph on Benzalhydroxy-Cyanide. By the same.

3. The assay of Ethyl and Amyl Nitrites and their method of preparation, with a bibliography. By R. Fischer and J. A. Anderson. This subject was taken up in Dr. Kremers' laboratory, at request of Dr. Charles Rice.

4. The Assay of Thymol and Carvacrol, and the influence exerted by an excess of Iodine. By Edward Kremers and others.

III. Preliminary work has been done by Dr. Kremers upon the following named subjects:

1. The Assay of Cynalyl Acetate.

2. The Assay of Menthol and of Menthyl Esters.

3. The Oil of Cloves, its changes, and the Essay of Eugenol and Eugenol Acetate.

4. Changes in the Oil of Bay.

5. The influence of Terpenes on the Acetylization Method for the Assay of Alcohols.

6. Attempt to assay Pulegone by splitting it into Wallach's methylcyclohexenone and acetone, and assay of the latter.

7. Examination of commercial samples of Oil of Turpentine.

8. Preparation of Inactive Pinene regenerated from the nitroso-chloride for the study of its physiological behavior. (Bearing on "Terebene.")

9. Study of physical properties of regenerated Carvene (?) preliminary to the study of its physiological behavior (Dr. Kahlenberg and Mr. Stevens).

10. Further work on the Monarda Oils.

In concert with some of these investigations certain work has been done by Dr. True and others under direction of Professor Henry H. Rusby in Committee C. of the Committee of Revision.

The main features of Dr. Kremers' work have been to take up the principal constituents of the volatile oils and make a thorough study of them in all their bearings in so far as they are of interest to pharmacy, directly or indirectly. For certain reasons he has commenced with the ethers, though having plans for a great deal of work upon the hydro-carbons.

In General Pharmaceutical Assaying.—Dr. A. B. Lyons has resumed his former work in this subject. He has prepared another specific gravity table in continuation of those he contributed about ten years ago, namely: *A Gravity Table for Solutions of Citric Acid.* He is also to offer a paper *On the Chemical Examination of Wines.* In this paper he will set forth the fact that alcoholic distillates, also mixtures of alcohol and water, increase appreciably in density on standing. *A Paper on Botanical Nomenclature,* as concerning indigenous plants, will be presented by Dr. Lyons, at the Baltimore meeting. *A critical review of the more important methods of alkaloidal assay* may be expected from the same author at an early period.

The Chemistry of Cascara Sagrada is to be continued in study by Dr. Alfred R. Dohme. He desires to do further work upon the glucosides and their products, and upon purshianic acid, which he has surmised to be a trioxy-dimethyl-anthraquinone. *The Chemistry and Assay of Digitalis,* in review of the recent work of Professor C. C. Keller, is a subject deemed by Dr. Dohme very important for pharmacy, and if possible he will work more at length upon it himself. An article appears from him in Druggists' Circular, August, 1898. The *Chemistry of Aloes* receives a contribution, with assays, from the same author in American Journal of Pharmacy, August, 1898.

A series of articles *on the histology and pharmacognosy of leading drugs,* by Dr. Dohme, has appeared in the "Druggists' Circular," as follows:

On Liquorice, Arnica, and Turpeth, Aug., 1897.

Ipecac, Lobelia, Senega, Columbo, and Soap Bark, Sept., 1897.

Bittersweet and Marshmallow, Oct., 1897.

Quassia and Pomegranate, Dec., 1897.

Cascara Sagrada and Savine, Feb., 1898.

Scientific Societies.

International Pharmaceutical Congress 1900.—According to the C. & D., steps have been taken recently toward forming an organizing committee. Prof. Planchon was elected chairman and Prof. Bourquelot secretary of the committee which is to be large. There are to be four sections: 1. professional interests; 2. galenical pharmacy; 3. chemical pharmacy; 4. materia medica and pharmacognosy.

New York Pharmaceutical Association.—The twentieth annual convention was held at Rochester, June 28 to July 1. Six sessions were held. The President reported that whereas some excellent work, not only for the pharmacists of the state, but for the public as well had been accomplished, an "all state" pharmacy act had not been realized as was anticipated. General inertia on the part of the druggists is manifested by the attendance of but 10 p. c. of the members at the annual meetings. According to the secretary's report the membership at the time

of publication of the last proceedings was 708.

The following quotation is part of a resolution offered: "Resolved; that as stimulus to professionalism, graduation from a college of pharmacy as pre-requisite to examination for a pharmacy license should be incorporated in the proposed new law for the entire state."

The Committee on Commercial Interests made a similar recommendation.

Papers were read as follows: F. P. Tuthill, Cocaine; A. H. Brundage, A uniform standard for pharmaceutical registration; W. C. Anderson, Condition of pharmacy; Wm. C. Alpers, Urinary analysis; H. B. Ferguson, The use of the microscope in pharmacy; F. P. Tuthill; and E. C. Woodcork.

The following officers were elected: President: Wm. Muir of Brooklyn; Secretary: Judson B. Todd of Ithaca; Treas.: G. W. Dalton of Syracuse.

Albany was chosen as the next place of meeting.

In Memoriam.

J. A. R. Newlands, the English chemist who proposed the so-called system of octaves, died at Clapton, July 29, at the age of sixty.

J. E. de Vrij. — It is only a few weeks ago that European journals announced the celebration of the sixtieth anniversary of the doctorate on the part of this veteran pharmacognoist. That this meant more to de Vrij than to most men is shown in Flueckiger's interesting biography in the Gallerie hervorragender Therapeutiker und Pharmacognosten. The same journals now report the death of the nestor of European pharmacists at the Hague, July 30, in his eighty-sixth year.

Bibliography.

Dr. Fr. Hoffmann informs us that Kalm's book on travels (see p. ——) was not only translated into German, but also into English: Travels to North America by Prof. Peter Kalm. Translated from the Swedish work in three volumes, Stockholm 1753 to 1761, by J. R. Foster. London 1772.

The editor of the C. & D. had evidently forgotten his chemistry when he confessed that the meaning of Hazweiess was "a mistery" to him. If not, he has given proof to the American's opinion of the English capacity of appreciating a joke. The italicized word is the title of a new pharmaceutical journal from Alsace-Lorraine, which erscheint "wenn es kann".

Hints in practical urine analysis is the title of a neat little manual of forty-eight pages by Dr. Charles C. Yarbrough, formerly professor of chemistry in the Tennessee Medical College and now therapist of the Scientific Department of Frederick Stearns & Co. This booklet as well as Stearn's Dose Book, a pamphlet giving the doses of more than eight hundred of the principal drugs and their preparations on the authority of Dr. George M. Gould of Philadelphia, can be had gratis upon application to the well-known Detroit manufacturing firm.

In the annual report of the Botanist of the Dept. of Agr. was emphasized the importance of doing something to lessen the increased

number of fatal cases of poisoning due to carelessness or to a lack of correct knowledge of our poisonous plants, and as a result the Sec'y. of Agr. in Nov., 1894, appointed Mr. V. K. Chesnut to take charge of such a line of work. In addition to the chemical and physiological investigations which have been in progress, it has seemed desirable to distribute at once some simple but authoritative account of our commonest poisonous plants. Bulletin No. 20 of the Div. of Botany contains fifty illustrations and popular descriptions of as many plants. Every druggist, especially of the smaller towns, should secure a copy of this bulletin and collect the poisonous plants of his district that are apt to be mistaken for edible ones and thus prove fatal to children. In this way he can do work creditable to himself and useful to his community.

The summer number of the Chemist and Druggist, no doubt, attracts attention principally on account of the volume of advertisement that accompanies it. The careful observer, however, will have noticed that the regular reading matter which is almost drowned by advertisements in this special number is full of articles of historical interest. A coming centenary is the title of an illustrated article describing the development of the firm of which the present president of the Pharmaceutical Society of Great Britain is the head. The names of the two Bell brothers are also well known in English pharmacy. Another shorter article describes An old Rouen pharmacy, the one in which Vanquelin worked his way up from the position of garçon de laboratoire. Other articles more modern are The northest pharmacy in Britain, which seems to rival with one in the Klondike on another page; Progress of Japanese pharmacy; French military pharmacists.

The following July publications of the U. S. Dept. of Agr. may prove of interest to pharmacists and chemists:—

1. Historical sketch of the U. S. Dept. of Agr.; its objects and present organization.

2. Index to authors, with titles of their publications appearing in the documents of the U. S. Dept. of Agr., 1846 to 1897.

3. Food and food adulterants. Investigation made under direction of H. W. Wiley, Chief Chemist, with the collaboration of K. P. McElroy and others. Cereals and cereal products.

4. Composition of maize (Indian corn) including the grain, meal, etc. Compiled chiefly from the records of the Division of Chemistry by H. W. Wiley.

Commercial.

PRICE-LISTS RECEIVED:—

G. & R. Fritz—Vienna. Price-list, July 1898.

Fritzsche Brothers—New York. Wholesale price-list, July 1898.

Merck & Co.—New York. Merck's chemicals and drugs, July 1898.

Schering & Glatz — New York. Price-list of medicinal and toilet soaps manufactured by J. D. Stiefel.

Spencer Sons Co.—Buffalo, N. Y. Spencer's new microscope stands.

SUPPLEMENT.

Scientific Societies.

Papers read at the Baltimore meeting of the A. Ph. A.

I. Commercial Section.

1. B. F. G. Egeling: Pharmacy in Mexico.
2. J. A. Clarke: Co-operative manufacturing by retail pharmacists.
3. Rosa Upson Liebig: Pharmacy from a woman-pharmacist's standpoint.
4. M. C. Dow: Woman in pharmacy.
5. C. H. Bangs: Old drug stores made new.
6. Jos. Feil: Decrease of drug stores in the United States.
7. C. P. Nash: Pure methyl alcohol and its use in pharmacy.
8. W. O. Allison: Statistics of the drug market 1897—1898.
9. Jos. Jacobs: The cotton seed oil industry of Georgia.
10. —— Some of the drug conditions during the war between the States, 1861—1865.
11. —— Changes in the drug trade in the past forty years — summary.
12. —— Some practical suggestions from experience (exhibiting a number of products of home manufacture).
13. State Dept., Washington: The drug trade in foreign countries (Special consular reports, vol. 14.)
14. L. E. Sayre: The retail drug business before the advent of the cutter.
15. H. Freericks: A call to arms.
16. J. W. T. Knox: Criticism of the war revenue law of 1898.
17. —— The gospel of good goods.

II. Scientific Section.

1. J. U. Lloyd: Standards of black and white mustard seed. See p. 328.
2. Chas. T. P. Fennel: Note on the same subject.
3. H. V. Arny: Aromatic waters. See p. 396.
4. Joseph Feil: Time limits in the pharmacopœia.
5. H. H. Rusby: A comparison of the English and German works on the genera of plants with special reference to the U. S. Pharmacopœia. See p. 387.
6. A. B. Lyons: Scientific synonomy of our indigenous plants.
7. H. Kraemer: The qualitative examination of powdered drugs.
8. A. B. Stevens: Cathartic acid in rhubarb. See p. 374.
9. A. R. L. Dohme: The bitter principle cascara sagrada.
10. L. E. Sayre: Alkaloidal constituent of taraxacum. See p. 374.
11. E. H. Gane: A new drug from the Philippine Islands. See p. 386.
12. H. B. Hynson: A practical plan for differentiating coal tar products.
13. A. B. Prescott and H. M. Gordin: Certain alkaloidal periodides, and volumetric estimation of alkaloids as higher periodides. See p. 375.

14. E. L. Patch: Suggested process for deodorized tincture of opium. See p. 394.
15. O. W. Krueger: Do the present methods of preserving infant foods insure their perfect sterility.
16. A. B. Lyons: Table of specific gravities of solutions of citric acid.
17. —— Condensation in alcoholic distillates.
18. E. H. Gane: Bezoars and bezoardics.
19. L. F. Kebler: Notes on estimating eucalyptol.
20. —— Bébées.
21. J. Feil: The pharmaculity of precipitated calcium phosphate.
22. W. A. Puckner: Standardization of volumetric acid and alkali.
23. Henrietta Burden: A study of the Blaschka collection of glass flower models in its relation to pharmacy.
24. R. Fischer and J. A. Anderson: The assay of spirit of nitrous ether. See p. 373.
25. —— The preparation and assay of amyl nitrite.
26. J. W. Thomas Jr.: Arachis oil and its uses in pharmacy.
27. E. C. W. Koske: The decomposition of iodoform by light.
28. E. H. Bartley: On some liquid foods.

III. Section on Education and Legislation.

1. H. M. Whelpley: The metric system in medical colleges.
2. R. G. Eccles: The new pharmacology.
3. —— Colleges of pharmacy and the new pharmacology.
4. A. R. L. Dohme: Pharmacology in the curriculum and practice of pharmacy.
5. V. Coblentz: The nomenclature of modern synthetics.
6. W. C. Alpers: Shorter hours.
7. H. B. Mason: Is he a competent pharmacist who passes the state board after failing three times?
8. J. H. Beal: Colleges and attendance at colleges of pharmacy.
9. E. H. Bartley: Pharmaceutical education.
10. L. E. Sayre: Final examinations.
11. E. L. Patch: The school of practical experience.
12. Jos. Feil: Physics the foundation of pharmaceutical pedagogics.
13. F. J. Wulling: Outline of a course in organic chemistry for beginners.
14. A. R. L. Dohme: Secretionary analysis and bacteriological examinations by pharmacists.
15. J. M. Good: The care and control of prescriptions.
16. S. W. Williams: Simplified orthography.
17. F. H. Freericks: Poison: its legal definition and sale.
18. H. S. Webster: Practical pharmaceutical legislation.
19. A. B. Huested: Pharmaceutical education, examinations, and the present and future state of pharmacy.
20. F. E. Stewart: The United States Pharmacopœia and the medical profession.
21. W. L. Scoville: The leadership of the pharmacopœia.
22. T. D. Reed: Some elements in pharmaceutical teaching.

British Pharmaceutical Conference.

The following papers were read at the thirty-fifth annual meeting of the Conference held at Belfast, August 9, to 11:

1. John Moss: Kieselguhr. See p. 394.
2. E. J. Parry: Oil of eucalyptus. See p. 379.
3. V. G. L. Fielden: Gluten flour and its analysis.
4. E. C. C. Stanford: Thyroglandin. See p. 393.
5. E. Dowzard: A quick polarimetric method for the estimation of strophanthin in the B. P. tincture and extract. See p. 393.
6. W. A. H. Naylor and J. J. Bryant: Green extracts of the pharmacopœia. See p. 392.
7. E. C. C. Stafford: Alginoid iron and some other alginoids
8. J. C. Umney & R. S. Swinton: A new constituent of oil of lemon. See p. 379.
9. T. H. W. Idris: Notes on concentrated oil of lemon. See p. 380.
10. J. Umney: Commercial varieties of dill and their essential oils. See p. 383.
11. G. C. Druce: The salient features of the Irish flora.
12. T. H. W. Idris: Note on extract of ginger. See p. 393.
13. J. C. McWalter: Materia medica animalis.
14. E. S. Peck: Notes on ferrum redactum, B. P., 1898. See p. 393.
15. H. A. D. Jowett: The characters and methods of assay of the official hypophosphites. See p. 380.
16. D. & D. L. Howard: The basicity of quinine.
17. H. G. D. Jowett: Note on the mydriatic alkaloids. See p. 380.
18. P. Mac Ewan: Pharmacists and the pharmacopœia.
19. F. C. J. Bird: The galenical pharmacy of the 1898 pharmacopœia.
20. H. W. Gadd: The galenicals of the new pharmacopœia.
21. P. Kelly: The chemistry of the 1898 B. P.
22. A. L. Doran: The pharmacopœia chemically considered.
23. G. C. Druce: The nomenclature of certain drugs of the pharmacopœia.
24. E. J. Evans: Lime water.
25. C. S. Dyer: The amount of carbonic dioxide available in the official granular effervescent preparations. See p. 394.
26. G. Sharpe: Albumin and some types of proteid digestion. See p. 392.

Report of the Special Committee on Research. *

In Pharmacognosy, applied to the identification of drugs by structure, by Prof. J. C. Schlotterbeck, the following papers are to be recorded:

1. A comparison of Datura Stramonium with Datura cornucopia and Datura metaloides, with estimations of total alkaloids. The Pharmacologist, I. 65.

2. Clove bark. An anatomical study. *Ibid.*, I. 97.

3. Anatomical study of an undetermined species of Datura from Bahama Islands. To appear in the Pharmacologist, II. I.

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* Continued from p. 68.

4. Development of the Cotton Seed (Gossypium herbaceum). Desires to present this paper at Baltimore meeting.

5. Development of Cacao Seed (Theobroma Cacao). Nearly ready.

The above named papers are by Dr. Schlotterbeck and Mr. A. Van Zwaluwenburg.

6. A confirmatory microscopical test for the identification of inuline. A pharmacognostical study of Ilex Cassine (with Miss A. Coulter).

8. Experiments on a new color test for Cotton-seed oil.

7. Development of the seed of Lobelia inflata.

9. Study of several new species of Croton, with special reference to the development of the seed.

(7, 8, and 9 are subjects for work to be taken up.)

In the Chemistry of Taraxacum Professor Sayre has accomplished further analytical separations, and at the Baltimore meeting is to present a paper on "The alkaloid of Taraxacum root". It is his conclusion that there is an alkaloid in Taraxacum, a body responding to general alkaloid tests, which he has obtained in proportion of about 0.002 per cent.

The Standards for White and Black Mustard Seeds, and for Acacia, subjects which have been referred to this committee, have been accepted by Prof. Loyd and by Prof. Charles T. P. Fennel, from whom there are to be reports at the Baltimore meeting.

Certain questions of pharmacopœial standards referred to Prof. A. B. Stevens by this committee, will be reported on by him to the Committee on Revision of the Pharmacopœia, of which he is a member.

The Periodides of the Alkaloids and Volumetric Methods of Assay by Iodo-Potassium Iodide.—In this subject work has been continued by Dr. H. M. Gordin with A. B. Prescott. It has been found that the higher periodides of the alkaloids, those obtained when the iodine is in excess throughout the precipitation, are constant in composition. If the alkaloids form more than one periodide, as do most of them but not all, it is only needful to add the alkaloid solution to the iodine solution in suitable dilution of each. For Atropine, Strychnine, Brucine, Morphine, and Aconitine, the analysis of the (higher) periodide precipitate has in each case given constant figures. From the composition of the precipitate so obtained, a volumetric factor is calculated, and this factor proves true in sharp results of volumetric control analysis.

In order to have the method put to trial by analysis as soon as may be, the first two of the following numbered papers have been published. The third named, covering the subject so far, is offered at the Baltimore meeting. Work has been done on emetine, but is not complete, the question of pure alkaloid being a cause of delay.

I. Atropine Periodides and Iodomercurates. 1) Atropine enneaiodide, 2) Atropine mercuric iodides, 3) Atropine estimation as a periodide. —Jour. Am. Chem. Soc., xx. 330.

II. A Volumetric Assay of Opium. 1) Morphine tetraiodide and its analysis, 2) Verification of the volumetric factor upon morphine solutions of known strength, 3) A percolation process for the extraction of morphine from opium, the alkaloids

first being set free by ammonia with certain solvents, the powder being then percolated by benzol, lastly percolated with acetone for morphine, which is purified by solution in lime water, and then estimated as tetraiodide. The assay is made upon one gramme of powdered opium.—Phar. Archives, I. 121.

III. Volumetric Estimation of Alkaloids as Periodides. 1) The periodides in general, 2) the higher periodides in constancy of composition, 3) atropine enneaiodide, 4) strychnine heptaiodide, 5) brucine heptaiodide, 6) morphine tetraiodide, 7) aconitine triiodide, 8) atropine iodomercurate, 9) volumetric procedure, 10) confirmation of the iodine factors, 11) as to application in assay, 12) results in opium assay.

The application of the periodide method to opium was not in our plan, but offered itself in a way tempting a trial. It is too early as yet, to make definite proposals for the pharmacopœial use of the method for any of the alkaloidal drugs or galenicals, but the processes are at the service of analysts.

In the organization of this, the Special Committee of Research in the Section on Scientific Papers (Research Committee D., Section 2, in Committee of Revision and Publication of the Pharmacopœia), in 1897—98, the members are Messrs. Lloyd and Prescott for *one* year, Messrs. Lyons and Dohme for *two* years, Messrs. Rice and Kremers *ex officio*. Election of the Section is therefore to be made at this time, to fill the places of Messrs. Lloyd and Prescott* in expiration of their terms.

ALBERT B. PRESCOTT.

July 1898.

* Both gentlemen were reelected. *Ed.*

It appears desirable to add to the preceding report a record of the work done by that section of Research Committee D. which was under the immediate direction of the undersigned, so that those who are interested in pharmacopœial revision may find the subjects in one place together. The following investigations were carried on at the request of the undersigned by Mr. Carl E. Smith, Ph. C., at the laboratories of the College of Pharmacy of the City of New York, under the assistance and advice of Prof. Virgil Coblentz:

1. Testing of Formaldehyde. Published in *Amer. Journ. Pharm.*, Feb., 1898.

2. On the Assay of Belladonna Plasters, and the alkaloidal strength of the Belladonna Plasters of the market. Ibid., April, 1898.

3. Comparative accuracy of titrimetric and gasometric Methods of Estimating Hydrogen Dioxide in presence of various Preservative Agents. Ibid., May, 1898.

4. Examination of commercial samples of Amyl Nitrite and Spirit of Nitrous Ether, and a new method for their valuation. Ibid., June, 1898.

5. Valuation of Crude Carbolic Acid. Ibid., August, 1898.

6. Crude Caustic Soda sold in the market as Crude Caustic Potash. Ibid., August, 1898.

It is a cause of great satisfaction to the Committee of Revision that great interest is shown by competent original workers and investigators in problems which will confront the next revisers of the United States Pharmacopœia. In view of the results obtained, the committee has reason to feel amply justified at its action of having made a liberal ap-

propriation towards the expense of these investigations, and there is no doubt that this policy will be continued in the future as long as useful results are obtained, and funds are available for such purposes.

CHARLES RICE.

New York, August 1, 1898.

In Memoriam.

Henry Trimble. — The news of the death of Professor Henry Trimble came as a shock to his many scientific friends, for they realized that overwork under conditions not the most favorable was the cause for his early demise. His death seems in certain measure an offering of devotion on the altar of pharmaceutical science.

Henry Trimble was born in Chester, Pa., May 22, 1853. In 1872 he entered pharmacy as apprentice and in 1874 matriculated at the Philadelphia College of Pharmacy, from which he gratuated in 1876. He continued his chemical studies for some time at the University of Pennsylvania. In 1878 he assumed part interest in a drug store which he retained for five years. At the same time, since 1879, he assisted Prof. Sadtler at the Philadelphia College of Pharmacy, and in 1883 succeeded Dr. Power, his classmate, as Professor of Analytical Chemistry.

As quiz-master and as director of the chemical laboratory he came in close touch with a large number of students who learned to appreciate him as a teacher. Besides numerous articles, he has published a book on analytical chemistry which has passed through four editions. He was especially interested in the study of the tannins and published two small volumes on this subject. With Prof. Sadtler he is author of a text-book of chemistry, the second edition of which is just making its appearance. Since Prof. Maisch's death he has been editor of the American Journal of Pharmacy.

Bibliography.

The second part of Schlickum's Ausbildung des Apothekerlehrlings is to follow the first within a few weeks. (See p. 403.)

Grundriss der technischen Elektrochemie auf theoretischer Grundlage by Dr. F. Haber, docent at the Technical Highschool in Karlsruhe i. B., is announced as just out by R. Oldenbourg of Munich.

L'Opothérapie (see p. 275 of this volume for meaning etc. of term) is the title of a work by Dr. P. Claisse announced as in course of preparation by J.-B. Baillière et Fils of Paris.

Baltimore City, the Liverpool of America, is an exceedingly interesting and handsome souvenir of the recent Baltimore meeting of the A. Ph. A. Although the compiler of the book does not become apparent from the title page, rumor declares that the General Secretary is the author.

Professor Th. Husemann of Goettingen contributes an article on Jacob Berzelius in commemoration of the fiftieth anniversary of his death to a recent number of the Pharm. Ztg. in which he emphasizes the bearing of Berzelius' life work on pharmacy, its importance and appreciation.

Persons, to whom Heussler's monograph Die Terpene has not been accessible or but difficultly accessible, will be pleased to learn that Dr. Pond of Pennsylvania State College, who worked under Professor Wallach at Goettingen, has in hand an English translation of the work. The manuscript is ready and the book may be looked for in the near future.

At the Leipzig meeting of the Verein d. Naturforscher u. Aerzte, Emil du Bois-Reymond delivered a lecture "Ueber die Grenzen des Naturerkennens". Nine years later he supplemented this lecture by a second delivered before the Berlin Academy of Sciences in which he corrects some misunderstanding caused by the first. That these lectures are still read is indicated by a new edition published by Veit & Comp. of Leipzig. It is the eighth edition of the first and the fourth edition of the second address. The price is only M. 2.00.

A second edition of Ascherson's Flora der Provinz Brandenburg is being published by Gebrüder Borntraeger of Berlin. The work is to appear in four parts which are to follow each other in rapid succession, the last to appear this fall. Each part will consist of about ten forms and the subscription price of each form is 30 Pfg. When complete the price will be increased.

Among the recent publications of The Chemical Publishing Company of Easton, Pa., the attention of students and teachers is hereby called to 1. Laboratory experiments on the class reactions and identification of organic substances by Dr. Arthur A. Noyes of the Mass. Inst. of Techn. and Dr. Samuel P. Mulliker of the same institution; 2. Inorganic chemistry according to the periodic law by Prof. F. P. Venable of the Univ. of N. Carolina, and Prof. J. L. Howe of Washington and Lee Univ.

The movement to organize medical libraries in all larger cities is not only pushed by individual effort e. g. in Denver and Philadelphia, but has resulted in the establishment of a special journal, Medical Libraries. The object of the new journal is three-fold: First, to encourage the founding of medical libraries and medical departments in public libraries wherever the medical profession, is fairly organized; Second, to assist in accomplishing the aims of the Association of Medical Librarians, viz. to stimulate exchange of duplicates etc.; Third, to gather statistical data, publish reports etc. concerning medical libraries. This movement, which is now well under way deserves imitation on the part of the pharmacists of this country.

M. Demker, of the Museum of Natural History in Paris, according to Appleton's Popular Science Monthly, has received from Corea 375 specimens of roots, seeds, fruits, etc., represented in the pharmacopœia of the country as sovereign remedies against various diseases. There are also among them powders of soapstone, sand, and other mineral substances. All are enveloped in complicated wrappers inscribed with Corean and Manchu formulas. A manuscript containing a list of 110 medicines which can be manufactured with the drugs has also been sent to the museum. It gives in connection with

each formula, the name of the disease for which the remedy is to be administered. There are remedies for cold in the head, indigestion, headache, ill humor on getting up in the morning, and indisposition after "making a night of it."

The manuscript catalogue of the late Prof. Stohmann contains 725 numbers, which does not include a set of Liebig's Annalen from 1851 to 1897 and a number of other series of journals and proceedings. Besides general works the titles pertain largely to alcohol and fermentation, sugar and starch, also milk and other food-stuffs and to agricultural chemistry. Prof. Stohmann who died Nov. 1, 1897, represented technical and agricultural chemistry at the University of Leipzig. A biography of the deceased by Prof. W. Ostwald together with an extensive list of his publications will be found on p. 3214 of vol. 30 of the Berichte of the German Chemical Society. The catalogue will be placed at the disposal of those who may wish to consult it by the editor of this journal.

P. Blakistons' Son & Co. call attention to the fact that they have secured the sole right to reprint and revise the earlier volumes of Allen's Commercial Organic Analysis and that the reprint by the Philadelphia Book Co. misrepresents the present views of the author in regard to a large number of matters and includes even the errors discovered after the publication of the first volume. Dr. Henry Leffmann has been granted full authority by the author to revise the book. Volume I of this third edition, which contains about 100 pages of new material, and which covers the alcohols, neutral alcoholic derivatives etc., ethers, vegetable acids, starch, sugar etc., is now ready. Vols. II., III., IV. and an appendix volume are in preparation and are soon to be ready for distribution.

The same publishers announce as having in the press the following works: 1. Introduction to chemical-technical analysis by Prof. F. Ulzer and Dr. A. Fraenkel. Authorized translation by Dr. H. Fleck of the Univ. of Penn. For a review of the German edition see p. 163 of this vol. The English translation is to contain an appendix by the translator relating to food stuffs, asphaltum and paint. 2. Organic Chemistry by Prof. V. v. Richter of the University of Breslau. This third American edition is translated from the last German edition by Prof. E. F. Smith of the Univ. of Penn. 3. Physical chemical methods. By Dr. J. Traube. Authorized translation by W. D. Hardin of the Univ. of Penn.

From Lemcke and Buechner's Bulletin we take the following select list of recent publications not previously mentioned in this journal:

1. F. Crolas et B. Moreau: Précis de pharmacie chimique. Paris, 1898. 18°, pp. 670. 6 fr.
2. Vc. Gauthier: Manuale di toxicologica ad uso dei medici, farmacisti e studenti. Milano, 1898. 8°, pp. 462. 12 l.
3. N. J. C. Mueller: Neue Methoden der Bakterienforschung. 2. Hälfte. Stuttgart, 1898. 8°, pp. 97—176. 30 M.
4. Rb. Tigerstedt: Lehrbuch der Physiologie des Menschen. II. Bd. Leipzig, 1898. 8°, pp. VIII, 440. 12 M.

5. T. H. Huxley: The scientific memoirs of—. Edited by Mch. Foster and E. R. Lankester. Vol. I. London, 1898. 8°, pp. 622. 1 £ 5 sch.

6. Roscoe-Schorlemmer's ausführliches Lehrbuch der Chemie von Jul. W. Bruehl. VI. Bd. Die Kohlenwasserstoffe und ihre Derivate oder organische Chemie. IV. Theil. Braunschweig, 1898. 8°, pp. xii, 709. 15 M.

7. E. Vogl: Die wichtigsten vegetabilischen Nahrungs- und Genussmittel mit besonderer Berücksichtigung der mikroskopischen Untersuchung auf ihre Echtheit, ihre Verunreinigungen und Verfälschungen. 1. Lfg. Wien, 1898. 8°, pp. 64. 2 M.

8. L. Guignard: La morphine et l'apomorphine. Paris, 1898. 8°, pp. 728. 10 fr.

9. Lp. Schenk: The determination of sex. Authorized translation. London, 1898. 8°, pp. 173. 5 sch.

10. Martius, Eichler et Urban: Flora brasiliensis. Fasc. 123. Monachii, 1898. Fol. 188 Sp. 50 M.

11. R. T. Hewlett: A manual of bacteriology, clinical and applied. London, 1898. 8°. pp. 488. 10 sch. 6 d.

A Bibliography of the Metals of the Platinum Group, Platinum, Palladium, Iridium, Rhodium, Osmium, Ruthenium, 1748–1896. By Jas. Lewis Howe, Smithsonian Miscellaneous Collections, 1084. City of Washington, 1897. Pp. 318, 8vo. This fine volume forms one of the most valuable and comprehensive indexes to an important field of chemical literature produced under the auspices of the Committee since its appointment in 1882. It shows on every page evidence of conscientious and critical skill; the author- and subject-indexes, with which the book concludes, are important features. Its workmanship ond the method of presentation of data in type make Dr. Howe's volume a model.

References to the Literature of the Sugar-Beet, exclusive of works in foreign languages. By Claribel Ruth Barnett. U. S. Department of Agriculture. Library Bulletin, June, 1897. 9 pp., 4to.

This carefully edited contribution to the bibliography of a subject interesting to the chemist as well as to the scientific farmer, manifests the activity of the U. S. Department of Agriculture in its Library.

A Bibliography of the Metallography of Iron and Steel. By Albert Ladd Colby. Published in the Metallographist, Vol. 1, No. 2, pp. 168–178. April, 1898.

This includes 188 titles, arranged alphabetically by authors, and numbered chronologically; it is reprinted, extended and re-arranged from The Iron Age, January 27, 1898, by the author.

Review and Bibliography of the Metallic Carbides. By J. A. Mathews. Smithsonian Miscellaneous Collections No. 1090. City of Washington, 1898. pp. 32, 8vo.

Published by the Smithsonian Institution on recommendation of this Committee. Under each metal forming a carbide the author has given a brief synopsis of the chemical data with references to the literature on that subject. There is an author-index.

CATALOGUES ETC. RECEIVED:—

J.-B. Baillière et Fils — Paris. Revue mensuelle de bibliographie médicale. No. 6, Juillet, 1898.

The Chem. Publ. Co. — Easton, Pa. Catalogue.

Through Fritsche Bros. — New York. Katalog der Bibliothek des verstorbenen Prof. Dr. F. Stohmann zu Leipzig. Manuscript, pp. 20.

Lemcke & Buechner — New York. Monthly bulletin of world literature. Nos. 5, 6 and 7.

U. S. Dept. of Agr. — Washington, D. C. Monthly list of publications. Aug. 1898.

Commercial.

CATALOGUES & PRICE-LISTS RECEIVED:

Caesar & Loretz — Halle a. S. Preis-Verzeichniss. September, 1898.

Druggists Circular — New York. Pricelist. Sept. 1898.

Fritzche Bros.–New York. Wholesale price list. Aug. 1898.

Henry Heil Chem. Co.—St. Louis. Prices current of chemicals. Aug. 1898.

Roessler & Hasslacher Chem. Co. — New York. Price lists. Nos. 110, 111 and 112.

E. Sachsse & Co. — Leipzig. Vorzugs-Preisliste. Aug. 1898.

R. Stevenson & Son — Chicago. Pricelist. Sept. 1898.

PAMPHLETS & CIRCULARS RECEIVED:—

Caesar & Loretz—Halle a. S. Geschäfts-Bericht. Sept. 1898. Pamphlet, pp. 75.

Chem. Fabrik auf Actien — Berlin. 1. Schering's Formalin-Desinfektion. 2. Die Mydriatica mit kurzer Wirkungsdauer unter besonderer Berücksichtigung des Enphthalmin. Von Dr. P. Schneider, Goettingen.

L. W. Gans—Frankfurt a. M. Neue Vorschläge zur Jodtherapie d. Syphilis von Dr. G. Suelzer, Zürich. Pamphlet, pp. 10.

H. Haensel — Pirna a. d. Elbe. 1. Bericht über das zweite Vierteljahr 1898. Pamphlet, pp. 29. 2. Extract from quarterly report on assential oils and fruit essences. Pamphlet, pp. 22.

Dr. Peters & Rost—Berlin. Prospect No. 16: Sicherheits-Sandbad nach Dr. Holdi; No. 17: Neuer Thermostat zur Erzielung constanter Temperaturen innerhalb eines 1/100 Grades nach dem Apparat von Dr. Holde; No. 18: Präcisions-Gährungs-Saccharometer nach Dr. Lohnstein; No. 19: Neuer Gasentwicklungs-Apparat nach Jaeger; No. 20: Heizbarer Schüttelapparat nach Dr. Karsten; No. 21: Entlüftungs-Apparat für Rübensäfte, System Dr. Brumme; No. 22: Neuer Destillir- und Abdampf-Apparat in Verbindung mit einem Trockenschrank; No. 23: Neue Schlauchkuppelung; No. 24: Veraschungs-Ofen etc.

SUPPLEMENT.

Universities and Colleges.

Two new schools of pharmacy are to open their doors this fall: one in connection of the University of Tennessee; the other in connection with the State Agricultural College at Cornwallis, Oregon.

Philadelphia College of Pharmacy. The first of this year's series of pharmaceutical meetings was held Tuesday afternoon, Oct. 18. The program consisted of five numbers: 1. Fluid acetracts, by Prof. Joseph P. Remington; 2. The inversion of cane sugar in official syrups, by F. W. Haussmann; 3. Expressions regarding the Baltimore meeting of the American Pharmaceutical Association; 4. Remarks on observations made during the past summer; 5. Exhibition of specimens of Barbadoes aloes and cutting of a plant from J. U. Lloyd; also recent additions from Gilpin, Langdon & Co., Parke, Davis & Co., Richard Shoemaker, F. X. Merck, and E. H. Gane.

New York College of Pharmacy. On Jan. 18. of this year (See p. 9 of Suppl.) the regular meeting of the college was devoted to the discussion of vanilla. The meeting proved so successful that a similar program has been provided for the first quarterly meeting of this year, held Tuesday, Oct. 18. The subject discussed was sassafras. An admirable history of the drug has been prepared for the occasion by Prof. J. U. Lloyd. The botany was written up in a paper by Dr. W. A. Bastedo, the chemistry was presented from notes by Dr. Clemens Kleber, Director of the Chemical Laboratories of Fritzsche Bros. at Passaic. The pharmaceutical report was made by Prof. Geo. C. Diekman of the college, and a brief paper on the commercial aspects of the subject had been written for the occasion by Mr. Joseph A. Velsor of Peek & Velsor. The college is to be congratulated upon the excellent work it is doing in this direction.

CATALOGUES RECEIVED:—

Univ. of California — San Francisco. Prospectus of the twenty-seventh session of the California College of Pharmacy, Session 1898 to 1899.

Kansas City Coll. of Pharm.— Kansas City, Mo. Annual announcement 1898—1899.

Louisville Coll. of Pharmacy— Luisville, Ky. 28th annual announcement. Session of 1898—99.

Med.-Chir. Coll., Dept. of Pharm. Philadelphia, Pa. Announcement for session 1898—99.

Nat. Univ.—Washington, D.C. Catalogue of the Law, Medical and Dental Depts. for 1898—99.

Ont. Coll. of Pharm. — Annual announcement. Nineteenth session, 1898—99.

Scientific Societies.

American Pharmaceutical Association. — In the daily life of the druggist many questions arrise of a practical nature which might be answered by a series of experiments, but which for lack of time, of suitable apparatus, or of other facilities, remain

unsolved. Such are troublesome or unsatisfactory formulas, difficult or unsightly prescriptions, questions of the relation of quality to cost of drugs or chemicals, lengthy or complicated processes which might be simplified and problems concerning all phases of practical pharmacy.

The colleges of pharmacy of the United States and Canada are in a position to work out many of these problems, without cost to the druggists, and would doubtless be glad to show their interest in practical matters by undertaking such investigations and presenting their results in papers at the next meeting of the American Pharmaceutical Association.

The Association is in sympathy with the druggists in these matters and will undertake to find investigators for such questions as may be submitted. To this end all druggists, whether members of the Association or not, are invited to send questions, or descriptions of difficulties, concerning any branch of practical pharmacy, improvements desired in specified formulas (wherein a difficulty is described) etc., as early as possible.

Inasmuch as the colleges close in the early spring, and time is required for investigation, an early attention to this invitation is desired. No questions should be submitted later than May 1, 1899. While the committee cannot agree to solve all problems, and must reserve the right to reject such as are not of general interest, yet with your prompt cooperation in stating what you, as a practical druggist are specially intrrested in, we hope to make this of personal as well as of general value. Address all communications to Wilbur L. Scoville, Mass. College of Pharmacy, Boston, Mass. On behalf of the Scientific Committee A. Ph. A.

German Apothecaries Society. — The twenty-seventh annual meeting of this society was held in Cologne, August 23. and 24. Most of the proceedings are of little interest beyond the boundaries of the German fatherland. The annual meeting is of the nature of a congress of the delegates of the numerous local organizations. Pharmaceutical science was disposed of by listening to two lectures: one by Prof. Beckurts of Braunschweig on Arzneimittelprüfung einst und jetzt (The examination of medicaments formerly and at present); the other by Prof. Partheil of Bonn on Die Gehilfen des Chemikers aus der Reihe der Kryptogamen (The cryptogamic assistants of the chemist.) The address of the president was devoted to a review of the labors of the associations officers in the direction of professional and commercial improvements. The principal work of the congress consists in the discussion and disposal of various motions made by the local organizations. They were also largely of a commercial nature and are of interest to American pharmacists only in so much as they clearly demonstrate that the economic wellfare of the pharmacist is not secured by a system of government concessions or by two classes of apothecaries.

Association of German Men of Science and Physicians. — The seventieth annual meeting of what might be called the German association for the advancement of science was held in Düsseldorf during the week be-

ginning with September 19. The following three general lectures or addresses were delivered:

1. By Professor Klein of Goettingen on Universität und technische Hochschule;
2. By Professor Tillmann's of Leipzig on Hundert Jahre Chirurgie;
3. By Professor Lutze of Aachen on Ueber Thalsperren im Gebirge und deren Bedeutung im wirthschaftlichen Leben der Gebirgsbewohner.

Unlike the British and American associations, the German society has a section on pharmacy and pharmacognosy. With the growth of this section in recent years the interest in pharmaceutical science at the Apothecaries Society has dwind ed practically to a minimum. The attendance at this section was not over fifty but is said to have compared well with the average of the larger half of sections of the association. The following papers were presented at the several sessions of this section:—

1. Van Rijn—Maastrich*: Phytochemische Forschungen. p. 422.
2. W. Lenz—Wiesbaden: Ueber die Bestimmung der Alkaloide, insbesondere der Chinaalkaloide.
3. L. Bernegau—Hannover: Ueber Kolanüsse und Kolapräparate. p. 436.
4. ——: Darstellung von Kolafluidextrakt. p. 436.
5. O. Schumm—Hannover: Ueber die Prüfung von Kolanüssen und Kolaextrakt auf den Gehalt an Alkaloiden. p. 436.
6. Schuermayer—Hannover: Ueber die therapeutisdhe Verwendung frischer Kolanüsse.
7. Hartwich—Zürich: Geschichtliche und botanische Mittheilungen über Papaver somniferum.
8. ——: Eine Sarsaparillaverfälschung.
9. K. Dieterich — Helfenberg: Ueber die Beziehung des Asche- und Kaliumcarbonatsgehaltes zur Feinheit der Drogenpulver.
10. Wijsmann—Leyden: Zur Lokalisation der Alkaloide.
11. Mankiewicz — Posen: Ueber Oxalsäurevergiftungen.
12. Kippenberger — Kairo: Die Anwendung der Iod-Iodkaliumlösung zur Isolirung der Alkaloide. p. 421.
13. ——: Die Anwendung von Gerbsäure zur Isolirung der Alkaloide. p. 421.
14. G. Arends — Berlin: Ausführungsbestimmungen für das Deutsche Arzneibuch.
15. L. Bernegau—Hannover: Die Konservirung von Eiern und von Eigelb.
16. J. Gadamer—Marburg: Ueber Cochlearia Oel und Spiritus Cochleariae.
17. ——: Die Bestimmung des Coffeins im Thee, Kaffee und in Kolapräparaten.
18. ——: Atroscin u. i–Scopolamin.
19. Partheil—Bonn: Ueber neue organische Arsenverbindungen.

Of the four exhibits made in connection with the Düsseldorf meeting the historic exhibit, demonstrating the progress made in the natural sciences and in medicine since the time of the Pharaohs, was the most complete and interesting. Pharmacy was also represented in this exhibit.

* The German custom of placing the authors place of residence after his name is here followed.

The Apothecaries' Garden, London. In a recent issue of the Pharmaceutical Era there appeared an article under this caption giving a brief historic outline of an institution in which the pharmacists of the worlds metropolis ought, it would seem, to be deeply interested, but about which it appears the Apothecaries' Society is concerned only so far as to shift the responsibility of its care to other shoulders and rid itself of what has been an unwelcome burden.

Sir Hans Sloane.*

From the article referred to above we find that in 1673 the Apothecaries' Society leased from Lord Cheyne a small tract of land bordering on the Thames upon which to build a large house. A little later the idea of establishing a sort of garden occurred to it, for in 1674 the tract was walled and two years later planted with herbs. In 1712 the Chelsea property of Lord Cheyne was purchased by Sir Hans Sloane. In the new owner the Society found a friend who at times gave it substantial financial assistance toward the maintainance of the garden and in 1722 leased the land occupied by the garden to the Society in perpetuity "to the end that the said Garden may at all times hereafter be continued as a Physic Garden." In return for the use of this land the Society was to give annually to the Royal Society of London fifty properly dried and mounted specimens of distinct plants until it had presented two thousand plants. If at any time the Society should divert the lands of the garden to uses other than those of the Physic Garden, the original owner or his heirs were to have the right to offer the land to the Royal Society or to the College of Physicians for the same purpose and under the same conditions as set forth in the grant to the Apothecaries' Society.

The garden has been maintained up to the present by the Society with more or less difficulty. At times it has almost come to the point of throwing up its lease. As early as 1690 it was debated whether or not the Society better not give up the garden on account of expense, and again in 1853 the matter of surrendering the garden was discussed with the result that many lines of expenditure were cut off. In 1862 the herbarium was presented to the British Museum. The same year and again in 1874 considerable improvements were made about the garden. In 1736 Linnæus visited the garden and was allowed to take from it specimens of many plants. Dr. Lindley was interested in the garden, as may be inferred from the fact that two

* The Review is indebted to the Pharm. Era for the loan of the two cuts accompanying this article.

of the beds in the "Psysick garden" proper, which lies at the north end, were arranged by him according to the system laid down in his "Flora Medica." In this garden were planted the first Cedars of Lebanon ever planted in London. There were originally four; all are now dead and but one of the dead trunks is now standing. It appears inevitable now that unless the city of London shall in some way provide for the care of this ancient garden—the third in order of establishment in England—it will pass from its present state and be cut up into building lots, to the shame of Londons pharmacists be it said.

Bibliography.

The September number of Notes on New Remedies contains the first of a series of articles under the caption of Quarterly review of progress in pharmacy and therapeutics. The article contains a brief general survey of some of the principal groups of synthetic new remedies, viz. Antirheumatic and antipyretic medicaments; antiseptics, incl. therapeutic use of silver, intestinal antiseptics and pulmonary disinfectants; local anæsthetic agents. The intention of the publishers, Lehn and Fink, is to take up other lines of progress as well, e. g. the improvements made in the manufacture and testing of pharmaceutical preparations, etc. These articles, which are of a general nature, will admirably supplement the special information found scattered through the various periodicals.

P. Blakiston Son & Co. of Philadelphia announce the completion of the fifth edition of Bartley's Medical and pharmaceutical chemistry.

Schimmel & Co's Bericht for October 1898 contains in addition to the customary interesting information two valuable maps. The one represents graphically the distribution of the distillation of citronella oil in Ceylon and accompanies an illustrated article on citronella oil. The other locates and outlines the star-anise districts of Tonkin. Both maps are the result of Mr. Karl Fritzsche's voyage to Asia.

Since the beginning of this year the Pharmac. Zeitschr. f. Russland appears in the Russian language only. It was hoped at first that the German edition might be kept up as a quarterly, but this idea has now been abandoned.

Gebrüder Bornträger announce the appearance of two new botanical works. Gesammelte botanische Mittheilungen in two volumes by the well-known Berlin Professor, Dr. Simon Schwendener, price not bound 25 marks, bound 30 marks; also Ascherson and Gräbner's Flora des nordostdeutschen Flachlandes, treating of the Flora of the province of Brandenburg, of Altmark and of the dutchy of Magdeburg, bound in linen about 8 marks.

J.-B. Baillière et Fils have in course of preparation a second edition of the Formulaire des alcaloïdes et des glucosides by H. Bocquillon-Limosin, which is not only brought up to date, but which will also contain a chapter on the dosage of alcaloids.

The New York Mycological Club has published in connection with its list of members for 1898, constitution and by-laws, a list of the principle works on fungi accessible to students of mycology in Greater New York. The list comprises six journals and 122 books arranged alphabetically according to the names of their authors and states in which of the libraries it can be found.

The Pharmaceutischer Kalender 1899, edited by Dr. B. Fischer and G. Arends and published by Julius Springer of Berlin, is now out. The same publisher announces the second, revised edition of Die preussischen Apothekengesetze by Dr. H. Boettger, editor of the Pharmaceutische Zeitung.

Those interested in the history of chemistry will be pleased to learn that the second number of the Monographien aus der Geschichte der Chemie, edited by Prof. G. A. Kahlbaum and published by J. A. Barth of Leipzig, has already made its appearance. Number two takes up the development of Dalton's atomic theory in a new light, the treatise being based on unpublished letters and documents in possession of the Literary and Philosophical Society of Manchester. The authors are Henry E. Roscoe and Arth. Harden.

Another historical publication is announced by Ferdinand Enke of Stuttgart. No. 5 of vol. 3 of the collection of chemical and chemico-technical lectures is devoted to Justus von Liebig in commemoration of the twenty-fifth anniversary of his death. Its author is Dr. Walth. Roth. The same publisher announces vol. four of Dammer's handbook of chemical technology.

With the beginning of the year of 1898, Dr. Karl Shumann, Custodian of the Botanical Museum in Berlin assumed charge of the well known and very valuable Just's botanischer Jahresbericht. In spite of this change, the publishers, Gebrüder Bornträger of Berlin, announce that no essential changes in form or treatment of subject matter will be made. An effort to bring out abstracts of articles more promptly than heretofore is promised and botanists of all lands are requested to forward promptly to the editor separates of their articles. It

is hoped that this request may be heeded by botanists both for their profit and that of their fellow workers. Dr. Schumann's address, Berlin W. 30, Botanisches Museum.

CATALOGUES RECEIVED:—

J.-B. Baillière et Fils—Paris. Revue mensuelle de bibliographie médicale. No. 8.

P. Blakiston's Son & Co.—Philadelphia. A catalogue of chemical, technological and scientific books. Sept. 1898.

D. C. Heath & Co.—Boston. Publications 1898.

Lemcke & Buechner—New York. Monthly bulletin of world literature. No. 8.

U. S. Dept. of Agr.—Washington, D. C. Monthly list of publications. Sept. 1898.

Commercial.

The War Tax.—The following is the greater part of a communication received from the President of the well-known Detroit firm of Frederick Stearns & Co.:

"In my opinion there is no more opportune time than now to begin agitating the question of the repeal of the War Revenue Law in so far as it affects the drug business. The total war expenses have been about $225,000,000, and of this $200,000,000 is covered by the war loan, leaving only $25,000,000 to be made up from the internal revenue. Commissioner Scott is authority for the statement that the law is bringing in about $1,000,000 a day, and at this rate, the law having been in effect about three months, the revenues from this source amount to $90,000,000. The treasury is full to overflowing, and there is no way to stop it until Congress meets and amends the law, or repeals it. In view of these facts, there will certainly be a disposition to modify or perhaps repeal the entire law, at the coming session of congress, and I believe that the more vigorously we protest against its oppression now, the better chance we have to get rid of it.

I am quite unable to understand why the drug business, of all others, was selected for special taxation. Certainly it is not the most prosperous line of trade, and compared to the others, its volume of business is quite small. No doubt it was the intention of Congress that the druggists should collect the tax from the people who buy the goods, but, as everyone predicted, and as we all knew, this was impossible. The tax is being paid wholly by the retailers and manufacturers, mostly by the retailers, as there are but few manufacturers who, like our company, are paying the tax. Perhaps it would not be far from the truth to say that 80 to 85 per cent of the tax is coming out of the retail druggists of this country, the rest from the manufacturers. Now this is all wrong, entirely unjust. The manufacturers and retailers of drugs pay their share of the war expenses along with every other business concern by stamping sheir checks, telegrams, insurance policies, express receipts, legal instruments, etc., etc., and this is no small item either for a large concern. Inasmuch as that is their just share of the war tax, and we do not know of any one who is not bearing that part of it cheerfully, all that is collected from them in excess of that is unjust,—to put it in good

plain language, it is legal robbery. I do not think it is possible to urge this point too strongly. The special tax on medicines is just that much more than should be levied on the drug trade, and should be removed because it is impossible for them to collect it from the consumers.

In the event that it should be impossible to get the tax entirely removed from medicines, I should say that the proper thing to do would be to get the law modified so that open-formula, non-proprietary medicines would be exempt from tax. This is the part of the law that is the most oppressive to the retail druggists just now, for it prevents them from putting up their own preparations, even such simple things as paregoric and syrup of squill, without paying a tax on it. While a tax on medicines of any kind is objectionable, certainly a tax on open-formula, non-proprietary goods is, by far, more obnoxious than a tax on secret nostrums, and other proprietary goods; and in this I believe you will agree with me. What we should do then is to try and get the tax removed entirely, and if that should be impossible, have the worst part of it repealed, and trust to future legislation to rectify the rest."

U. S. Patent Laws.—The following is a part of an editorial which appeared in a recent number of the Bulletin of Pharmacy:

"In the United States the law permits the foreign inventor to secure privileges and monopolies which he would not even dream of soliciting in his native land. In other words, our laws confer upon the inventors of new medicinal substances, such as phenacetine, an odious, ironclad, permanent, and threefold monopoly.

They grant a patent on the process.

They accord a patent on the substance itself—on its chemical composition—on its very identity.

They permit the registering of the name, rendering the latter the exclusive property of the manufacturer for all time.

The same product, according to our American law, may not be manufactured by a different process even though offered for sale under a different name. Name, process, product—all are monopolized and held far beyond the reach of honest competition.

This explains the table of prices at the beginning* of these comments, and throws a flood of light on the evils begotten and nurtured of unwise legislation.

An equally important consideration is the effect on chemical industry in the United States. In Germany the wise law has fostered scientific research, industrial enterprise, legitimate competition. New processes for the production of meritorious remedies have been straightway devised; the same product is manufactured by a half-dozen laboratories and by as many different methods; prices are reduced by open competition, and the public is protected from extortion. In the meantime German chemical industry advances with rapid stride, and exhibits, to the chagrin and envy of Americans, the spectacle of an amazing progress directly attributable to an untrammeled freedom, whilst our laboratories remain few in number and

Drug.	Canada.	U. S.
*|Phenacetine	0.25	1.00
Sulfonal	0.20	1.35
Trional	.90	1.50

SUPPLEMENT.

Scientific Institutions.

The **College of Physicians and Surgeons** of San Francisco has added a course in pharmacy to its curriculum. Arrangements have been made whereby students can conclude courses in pharmacy and medicine in four years.

The **Lloyd Mycological Museum** was increased during 1897 by nearly a thousand named specimens, and a list of the species and donors is given in the third report of the museum recently issued. Fleshy fungi, both dry and preserved in alcohol, are desired. Correspondence should be addressed to Mr. C. G. Lloyd, Cincinnati, Ohio.

The collection was begun in 1895 with 243 specimens. January 1, 1896, the collection contained 1431 specimens representing 760 species, to which list 919 named specimens have been added during the year 1897.

The **Cincinnati Section** of the **American Chemical Society** met Tuesday evening, Nov. 15, in the Lloyd Library. The following papers and topics for discussion were presented:

1. On the six new elements: Neon, Metargon, Crypton, Xenon, Coronium and Polonium, by Prof. George Jackson.
2. Talk on the Manufacture and Uses of Carbonic Acid Gas, by Mr. J. M. Bursner.
3. Report on Scientific Meetings held during the summer. Informally presented by Mr. B. Pilhashy, Prof. Jonn Uri Lloyd and other members.

Philadelphia College of Pharmacy. The second of the series of pharmaceutical meetings for this session was held Tuesday, Nov. 15. The program was as follows:

1. Product Patents from a Pharmaceutical Standpoint. By Mr. William L. Cliffe.
2. Medicinal Lithium Carbonate. By Mr. Lyman F. Kebler.
3. Quebracho and its Uses (Illustrated with Specimens). By Mr. Frederick L. Lewton, of the Philadelphia Museums.
4. Crystals of Sodium Chloride in Fld. Ext. Yerba reuma and a Proximate Analysis of the Plant. By Mr. Lyman F. Kebler.
5. Process for Making Gelatin Pearls (Illustrated with Specimens). By Mr. Frank G. Ryan.

Swiss Apothecaries Society. — At the German Apothecaries Society a slight interest for pharmaceutical science still manifests itself in the program as is shown by the two lectures delivered at Cologne (See p. 82 of Supplement). The Swiss society, which met this year in St. Gallen, Aug. 10 and 11, evidently adopted a similar policy. The following addresses* on scientific subjects were delivered:—

1. Dr. Ambuehl: Ueber diverse Laboratoriums-Apparate, so zum Nachweis von Arsenik und zur Gewinnung von absolut fettfreiem Aether.

2. Dr. Schaerges: Ueber organotherapeutische Producte und Präpa-

* One of these has been published in No. 33 of the Schw. Wochenschr. f. Chem. u. Pharm., the offic al organ of the society.

rate, namentlich über diejenigen der Schilddrüse. (No. 33, p. 363.)

3. Dr. Rehsteiner: Ueber Wasseruntersuchungsmethoden, insbesondere über Bestandtheile der organischen Substanzen.

The only other item of scientific import mentioned in the proceedings is a report by Prof. Tschirch as to the status of the society's library deposited with the Pharmaceutical Institute at Bern since 1897. The library includes 1000 volumes and pamphlets and, no doubt, is very serviceable as located at present, but has not received the attention from members in the way of donations that was hoped for.

To the American pharmacist, who travels a thousand miles and more to the meetings of his national association, it seems strange indeed to read of the "great distance" from the western cantons to St. Gallen, which some of the members had to travel.

Notes.

Professor A. F. W. Schimper, of the University of Bonn, who had charge of the course on pharmacognosy, has been called to Basel.

The municipal government of Strassburg has offered without cost to the university a lot for the erection of a pharmaceutical institute.

Prof. Goebel, Director of the Botanical Garden at Munich, is about to undertake a scientific excursion to tropical and subtropical Australia.

As in previous years the Pharmaceutische Zeitung offers for 1898—99 M. 1000.00 in stipends to be distributed to five needy students attending a university in pursuance of their pharmaceutical studies.

Dr. Oskar Brefeld of the Academy at Muenster is to succeed the late Prof. Ferdinand Cohn at the University of Breslau. Brefeld is the son of an apothecary and for a short time pursued the pharmaceutical career, but since 1869 at the age of thirty has devoted himself exclusively to botany.

PROCEEDINGS RECEIVED:—

Missouri Pharm. Ass'n. 1898.
New Jersey Pharm. Ass'n. 1898.

Biography.

The De Candolles.*—To every botanist the name of De Candolle is familiar. To many others also who are incidentally interested in plants, as the pharmacist, the name is not unfamiliar. It may not, however, be generally known outside the botanical fraternity that the family name has been represented among prominent botanical authors and investigators continuously by living representatives through four successive generations. The home of this family during all these years has been at Geneva, Switzerland. The first of this remarkable quartet, in point of time, was Augustin Pyrame De Candolle, following him in successive generations are Alphonse, Casimir and Augustin, the last two being still alive.

J. F. Joor. — Among the many men who have performed valuable service for American botany and yet who are little known outside their immediate neighborhood must be included Dr. Joseph F. Joor. He was born in Louisiana in 1848 and died

* Those who are desirous of learning more about this family will find something of interest in a recent number of The Botanical Gazette, 26, p. 274.

in the same state in 1892. Very early in life he formed a liking for plants. This liking remained with him until the day of his death. His elementary education was received in the common schools and from private tutors. His technical training he began in a drug store in Baton Rouge and continued in hospitals and medical schools of New Orleans. During his life he filled many positions of importance and trust, accepting finally a position in Tulane University, New Orleans, that of Professor of Botany. This position he occupied at the time of his death. The field of his botanical work (largely systematic) was Mississipi, Louisiana and Texas. He also did collecting in Illinois while a boy. His herbarium is in Tulane University and in the herbarium of the Missouri Botanical Garden.

In Memoriam.

Dr. **Ewald Geissler,** the successor of Hermann Hager on the Pharmaceutische Centralhalle, who died Oct. 15 after a somewhat prolonged illness, was born April 20, 1848, in Steinigtwohnsdorf, Saxony. He entered upon the pharmaceutical career after due preparation and in 1870–71 went through the experiences of the Franco-German war as field apothecary. After the war he matriculated at Leipzig and passed the stateboard examination in 1872. In 1874 he again matriculated, this time at Jena where he soon after was appointed assistant to Prof. Reichart. He left Jena in 1876 and established a public laboratory in Dresden.

For several years his time seems to have been given largely to the analysis of foods, beverages, etc. There was a certain novelty to the work at that time and he seems to have acted as public educator as well as analyst along these lines. Having succeeded Hager on the Pharm. Centrh. in 1880, he naturally brought this work prominently before the apothecaries of Germany. He also worked, however, along pharmaceutical chemical lines, e. g. the assay of opium, of antiseptic bandages, etc. When the Ph. G. II introduced volumetric methods, Geissler wrote his guide which was later extended to his Grundriss der pharm. Maassanalyse. In 1886 he was appointed Professor of Chemistry, Physics and Materia Medica at the veterinary "high-school" or college at Dresden.

Geissler's principal pharmaceutical work, however, was that as editor with Dr. Moeller of Vienna for the Real-Encyclopaedie der gesammten Pharmacie, a monumental work without a peer in any language.

Davis Ames Wells, whose work in chemistry has been almost forgotten even by the older generation because of his much more important work along economic lines, died at his home in Norwich, Conn., Saturday, Nov. 5. He was born in Springfield, Mass., on June 17, 1828. In 1847 he graduated from Williams College. For a short time he engaged in newspaper work, but soon entered the Lawrence Scientific School at Harvard, from which he graduated in 1852. He remained at Harvard as assistant professor, and was also lecturer on physics and chemistry at the Lawrence Academy in Groton, Mass. While in Cambridge in 1849, he began with George Bliss the publication of the Annual of Scientific

Discovery, which he continued until 1866. During the years 1867–8 he was a member of the New York publishing firm of G. S. Putnam & Co., and in this period brought out a number of scientific textbooks, which were extensively circulated. "His Science of common things", says his biographer in the Nation, "will be remembered by many persons now of middle age as containing just those facts in natural science, a knowledge of which is indispensable in ordinary life." His book upon chemistry was adopted as text-book in the U. S. Military Academy. However, as already stated, his principal work was done in a different field.

The death of **Colonel Waring** as a result of his exposure to yellow fever at Havana may here be recorded, not so much because of the relation between pharmacy and practical sanitation, but because his career is so typical of our way of doing things. He had demonstrated in spite of the greatest opposition the possibility of cleaning New York City. Not very safe in his party, it was but natural that the other party should turn him out at the first opportunity presenting itself. It evidently did not occur to any other city—and there are plenty of dirty cities in this country—to employ this expert. The best use this country evidently had for his expert services was to send him out of the country. He has returned, but not to cleanse the filthy streets of our cities.

Bibliography.

John Wiley & Sons have issued a third edition of A text-book of volumetric analysis, rewritten and reset. Its author, Henry W. Schimpf, is Professor of Inorganic Chemistry in the Brooklyn College of Pharmacy. The book is especially designed for the use of pharmaceutical students.

Geschichte und Systematik der Indigo-Synthesen is the title of a book by Dr. H. Reissert soon to be published by R. Friedlaender & Sohn.

Friends of the late veteran pharmacist Herrmann Hager have decided to bring the Manuale pharmaceuticum, so well known to German pharmacists all over the world, up to date. Dr. Eugen Holdermann has been trusted with reediting the work. He as well as the publisher invite the cooperation of all who are interested in the memory of its former author. The new edition is to be German, not Latin. The editor of the Review will be pleased to forward contributions in the way of corrections and additions to the revisor. Such contributions should be signed.

A second edition of Dr. Erwin v. Esmarch's Hygienisches Taschenbuch is announced by Julius Springer. The book ought to prove especially useful to such druggists who are interested in the government of smaller communities and of schools.

The Chemiker-Kalender 1899, edited by Dr. Rudolf Biedermann and published by the same firm, is now out.

P. Blakiston Son & Co. announce as just ready the Introduction to chemical-technical analysis by Ulzer and Fraenkel; also Physico-chemical methods by J. Traube. The former is translated by Dr. H. Fleck, the latter by Dr. W. Hardin, both of the University of Pennsylvania.

Ferdinand Enke of Stuttgart announces the completion of the five volume Handbuch der chemischen Technologie by Dr. O. Dammer and others.

G. Fischer of Jena is publishing a work by the well-known pharmacognosist Arthur Meyer. It is entitled Botanische Practica. The first "Practicum", which undertakes to initiate the student into the use of the microscope and the anatomy of the higher plants, has appeared recently.

Of the Encyklopaedie der Therapie, which is edited by Prof. Osc. Liebreich and published by A. Hirschwald, the third part of vol. II has been completed.

Urban & Schwarzenberg have published Pharmakotherapie, evidently a reprint from the Lehrbuch der allgemeinen Therapie by Hy. Schulz.

The English translation of Schimmel and Co's. Report has already made its appearance. During the last two years the English report has been much more prompt than formerly. The translation also is better. Both improvements will be greatly appreciated by those who do not read the original German report.

The Department of Agriculture at Washington, in order to diffuse knowledge concerning poisonous plants and lessen the increasing number of fatal cases of poisoning due to carelessness and ignorance has issued a bulletin on the subject. Mr. V. K. Chestnut has here drawn up descriptions of about fifty such plants and illustrations of a large number accompany the text. This pamphlet, Bulletin No. 20 Division of Botany, contains 60 pages and 34 illustrations.

Medical Libraries has begun the publication of what promises to be a very interesting series of articles on The Physician in Fiction. In Number 4, J. C. Dana writes on The Medical Profession as seen by Charles Dickens, and in Number 8 Laura Katherin Stuart on medical men in Thackery. The former article contains a tabulated list of twenty-seven medical students, physicians, surgeons and doctors in Dickens' novels. Of these the author says: "Not one is characterized especially as having ability, as being a person of sound good sense; not one would seem to indicate by anything he is allowed to say in the pages in which he lives, that he is a man of brains, with the possible exception of Dr. Manette in the Tale of Two Cities, and Joe Specks in the Uncommercial Traveller." Some interesting speculations follow as to the reason for this poor showing. In Thackery the appearance made by physicians is much more creditable. Further articles in the series are promised on Scott, Hawthorne, Beecher-Stowe, Tolstoi, Hugo and others.

CATALOGUES RECEIVED:—

Chemical Publ. Co.—Easton, Pa. Catalogue.

Gustav Fock—Leipzig. Lagerverzeichniss No. 147: Chemie u. Pharmazie.

Lemcke & Buechner—New York. Bulletin of world literature. Sept. 1898.

Julius Springer—Berlin. Empfehlenswerthe Werke für Pharmaceuten.

B. G. Teubner—Leipzig. Mittheilungen, 1898, No. 4.

U. S. Dept. of Agr.—Washington, D. C. Monthly list of publications. Oct. 1898.

The Macmillan Company—New York. Catalogue: Botany, Chemistry, Physics, etc.

Commercial.

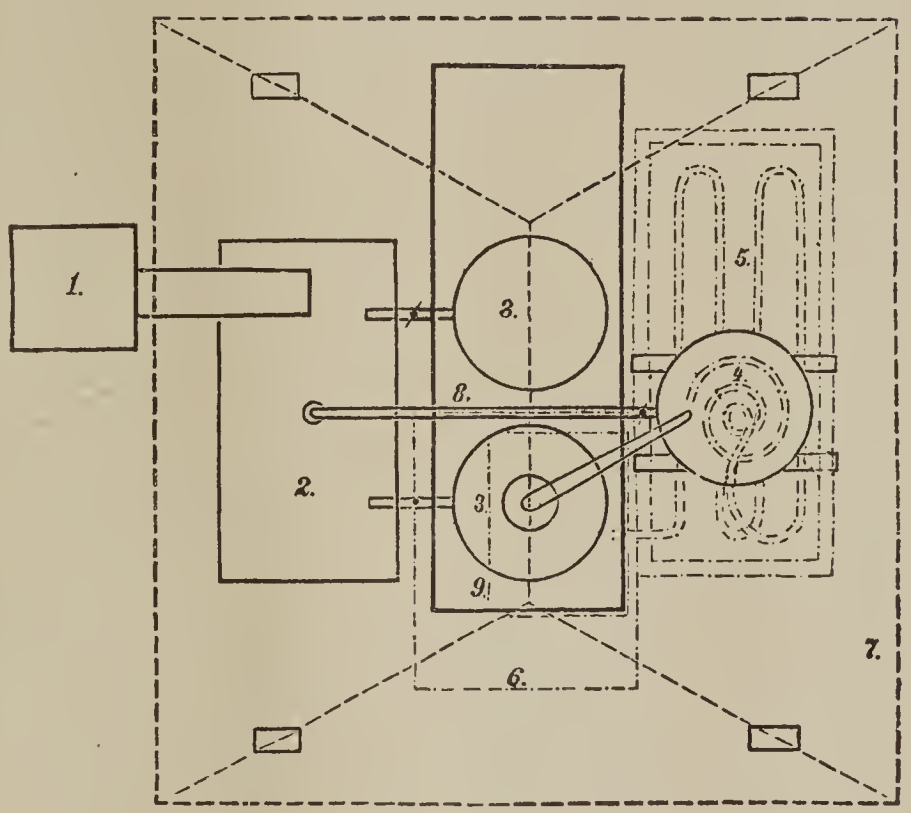
Citronella Oil.—According to Karl Fritzsche, citronella grass is cultivated exclusively in the Southern Province of Ceylon, mainly between the rivers Ginganga in the north-west and Wallaweganga in the east. The grass grows only on the declivities of hills, unless they are occupied by brush-wood or by tea-plantations, which have recently been cultivated with much success. The grass reaches a heighth of about 1 meter and stands irregularily scattered in tufts. Ferguson states in his rather antiquitated "Handbook of Ceylon", dating from the years 1896 to 1897, that 30,000 to 35,000 acres of land were occupied by citronella plantations. But since the compilation of that book the cultivation of citronella grass has rapidly increased and competent dealers estimate the present extent of the plantations at 40,000 to 50,000 acres of land. Exact figures will hardly be obtainable before the government will institute an official census.

The plants seem to require little, if any, care; but the harvests must be gathered regularly in time, because otherwise the spikes would grow too luxuriantly and partly decay. Although the climatic conditions in Ceylon admit a constant growth of the vegetable world irrespective of seasons, so that harvests could be gathered throughout the year, the crops of citronella are generally cut but twice a year, one in July or August, and one in December, January or even February. The first and most productive one preceeds the north-east monsoons at a time when the hands necessary for cutting, harvesting and distillation can most conveniently be had. In September and October, before the rainy season sets in, the laborers are needed in the rice fields. The second harvest begins before the time when the rice fields have to be made ready for the south-west monsoon which occurs during April and May. The gathering of the citronella grass, therefore, takes generally place at a time when the coolies are not engaged in the care of the more important rice fields. It sometimes even happens that citronella plantations are left uncut for one or two harvests for want of laborers. The yield of oil is estimated at 16 to 20 vials, each containing 22 oz., per acre for the summer crop, and 5 to 10 vials for the winter crop. Exact figures can hardly be given since the product varies according to the age of the grass, the weather and the local conditions of the various plantations. The longer an estate is worked, the less oil it is said to yield even under favorable conditions of weather and soil. After the lapse of 15 years the vitality of the grass seems to be exhausted and the raising of new plants becomes necessary in order to keep the estate in a remunerative condition.

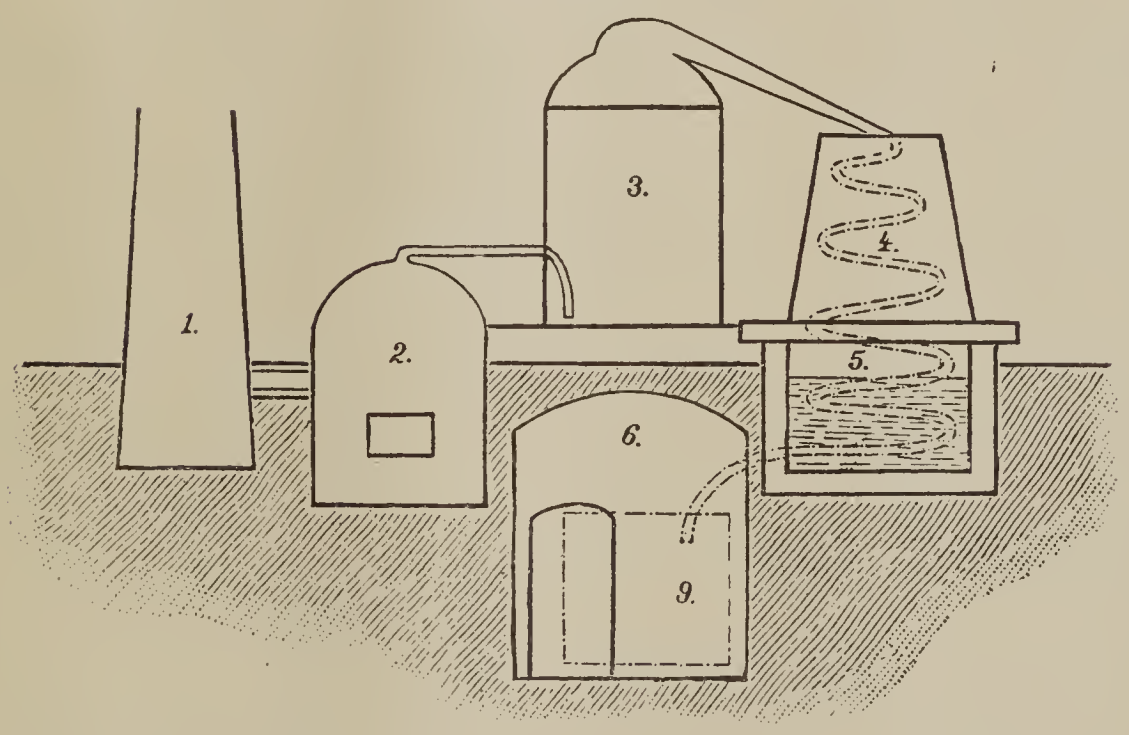
In addition to a rather neglected p'antation in the neighborhood of Galle, Mr. F. visited the country between Matara and Akuressa, located in the centre of the citronella districts, and also the tract between Akuressa and Henegama. The distilleries are lo-

cated at the base of the ridges and hillsides where cool water is to be had in sufficient quantity. They are readily observed in the barren tropical landscape by their low and clumsy chimneys, about 13 feet high. In most cases the construction of these distilleries is by no means the alleged primitive one and it is surprising how well the natives, who constitute the greatest part of the producers, have succeeded in the construction of their distilleries. These are generally located under a protect-

Top view.



Side view.



1. Chimney. 2. Steam-boiler. 3. Still. 4. Cooler. 5. Cooling basin. 6. Cellar for collecting the distillate. 7. Shed. 8. Steam-pipe. 9. Basin for collecting and preserving the distillate.

ing shed, and consist of a steam-boiler with a safety-valve and water-indicator resting upon a solid foundation, of two cylindrical iron stills, mostly 6 to 7 feet high and 3 to 4 feet in diameter. They are furnished with a common interchangeable alembic and are connected with a large wooden barrel containing the serpentine cooler and underneath a large subterranean receptacle for the collection of the distillate. This is located in a basin which can be locked in order to prevent pilfering of oil.

The following diagrams will sufficiently explain such a distillery.

The distillation consists in direct steam-distillation without the addition of water to the grass. The warm water passing from the cooler is used for feeding the boiler while the lower basin (5) through which the serpentine tube passes serves for a final cooling of the distillate. The only thing abnormal is that the distillate is collected and preserved without a prompt separation of the oil and the water. The reason is said to consist in the fact that the coolies are prone to stealing and cannot be entrusted with the collection of the pure oil. When a certain amount of distillate has accumulated in the large basin in the cellar, which is kept under lock, the proprietor bottles the oil, while the aromatic water is allowed to run away.

Each distillation requires about 6 hours or longer, as labor and material do not count much. For the management of such a distillery there are necessary: 10 women for cutting and binding the grass into bundles, 3 coolies for loading and bringing it to the distillery, 3 coolies for attending to the boiler and still. The wages for coolies are 37½ cents per day, for women 18 cents per day. Fuel does not cost anything as the exhausted grass from the stills, after having been dried in the sun, serves as fuel. The Southern Province of Ceylon is devoid of wood so that the working of the distilleries has to be stopped for want of fuel as soon as the rainy season sets in and the refuse grass cannot any more be dried in the sun. The total expenses for running a plant, therefore, consist only of the wages for laborers and the wear and tear of the distilling apparatus, which, however, is inconsiderable.

A still of 7 feet in height and 4½ feet in diameter produces about 16 to 20 vials, each holding 22 oz. of oil per day, equal to 360 to 440 oz. The weight of the grass put into the still is never ascertained, the still is simply filled with the dry grass and the steam turned on. A special drying of the grass is not customary. When the grass is cut, it always takes several hours before it reaches the still and this time, at the tropical heat, is sufficient to deprive the grass of most of its moisture. Exact figures about the percentage of yield of the grass therefore are wanting. This varies considerably at the various seasons; the yield is smaller at the second cut in January and February, when the grass blooms, while it is much larger in July and August after the monsoon rains, when about 18 vials = 406 oz. of oil are expected from each acre of land against 125 to 150 oz. in January.

In some localities common stills with fireplace underneath are said to be still in use. In this case, of course, the grass is distilled with water. Most citronella oil, however,

is now obtained by steam distillation.

The total number of stills is estimated, according to S. & Co.'s Report, p. 14, at 400, producing about 1,0000,000 lbs. of oil per annum. Ferguson enumerates in his book on Ceylon, cited above, the following principal districts of citronella grass cultivations:—

Estate	Citronella	near	Akuressa	about	1400	acres
"	Wilpita	"	"	"	800	"
"	Charley Mount	"	Weligama	"	900	"
"	Rose Neath	"	"	"	500	"
"	"Fred's Ruhe"	"	Hikkaduwa	"	250	"
"	Wallahandova	"	Galle	"	390	"
"	Ratmaherre	"	Dodanduwa	"	260	"
"	Katherine Valley	"	Kataluwa	"	280	"
"	Karayaldeniya	"	Akuressa	"	180	"
"	Nidenwela	"	Weligama	"	150	"
"	Danapatiya	"	"	"	220	"
"	Galduwewadda	"	Weragoda	"	200	"
"	Miriswatta	"	Tangalla	"	200	"
"	Rose Wood	"	Galle	"	100	"
"	Mellagalpathe	"	Weligama	"	100	"
"	Karayalemyawatte	"	Kataluwa	"	125	"
"	Panapittygalla	"	Balapitiya	"	154	"
"	Udabatalahena	"	Parawahera	"	100	"
"	Borakanda	"	Ambalagoda	"	100	"
"	Kananka	"	Akuressa	"	150	"

The largest export figure is recorded for the year 1897, amounting to 1,181,867 lbs.; this will still be considerably exceeded by the figures of the present year, since the shipments of citronella oil up to August 30th (the first 8 months) amounted already to 1,021,626 lbs. against 781,832 lbs. during the same term in 1897.

Of this quantity there were exported to:—

England	461,692 lbs.
America	521,601 "
Germany	17,425 "
India	9,920 "
Australia	4,792 "
France	3,440 "
China	2,012 "
Singapore	504 "
Africa	240 "
Total	1,021,626 lbs.

When compared with the plantations on Ceylon, those of the Straits Settlements near Singapore are almost insignificant. In the "Singapore and Straits Directory for 1898" the following citronella producing estates are mentioned:—

Estate	Ceylon Epoh.,	Province	of Negri Sembilan	500	acres
"	Hardouin,	"	" Wellesly	40	"
"	Perseverance,	"	" Singapore	450	"

The "Selangar Plantations Syndicate", Limited, recently organized in the Straits Settlements, has entered upon the production of citronella oil. According to a Sample recently received by S. & Co., this oil is of exceedingly fine quality, containing as much as about 90 percent of geraniol

and being readily soluble in 1½ volumen or more of 80 percent alcohol.

Efforts are also being made in Java to secure trade in citronella oil.

PRICE-LISTS & CIRCULARS RECEIVED:—

Fritzsche Bros.—New York City. Wholesale pricelist, Oct. and Nov. 1898.

Roessler & Hasslacher Chem. Co.—New York City. Pricelist, Oct. and Nov. 1898.

E. Sachsse & Co.—Leipzig. Vorzugs-Preisliste, Sept. 1898.

Schering & Glatz—New York City. 1) Pricelist of fine chemicals, Nov. 1898; 2) Pricelist of medicinal and toilet soaps manuf. by J. D. Stiefel.

PAMPHLETS AND CIRCULARS RECEIVED:

Fritzsche Bros.—New York City. Semi-annual report of Schimmel & Co. Brochure, October 1898.

Heinrich Haensel—Pirna. Extract from quarterly report. Oct. 1898.

Kny-Scherer Co.—New York City. A new analytical balance.

Schering & Glatz—New York City. Circulars on Argentum Credé (soluble metallic silver); Unguentum Credé (ointment of soluble metallic silver); Urotropin; Alpha- and Beta-Eucaine (eucaine hydrochlorate "A" and "B"); Kresamine (ethylenediamine-tricresol); Duotol (guaiacol carbonate-v. Heyden); Creosotal (creosote carbonate-v. Heyden); Xeroform (tribromphenol-bismuth); Formaldehyde as a practical disinfectant for instruments; Schering's formaline disinfectant and deodorizing lamp; Stiefel's medicinal soaps.

J. E. Surman & Co.—New York City. Crusher and pulverizer combined.

Williams, Brown & Earle—Phila. New projecting microscope.

Cost of Rare Metals.—The following shows the cost of rare metals per pound, avoirdupois, says The Mining and Scientific Press:

1.	Gallium	$68,600.00
2.	Vanadium	10,780.00
3.	Rubidium	9,800.00
4.	Thorium	8,330.00
5.	Glucinium	5,800.00
6.	Calcium	4,900.00
7.	Lanthanum	4,900.00
8.	Lithium	4,900.00
9.	Indium	4,410.00
10.	Tantalum	4,410.00
11.	Yttrium	4,410.00
12.	Didymium	4,410.00
13.	Strontium	4,200.00
14.	Arium	3,675.00
15.	Erbium	3,675.00
16.	Ruthenium	2,695.00
17.	Niobium	2,450.00
18.	Rhodium	2,450.00
19.	Barium	1,960.00
20.	Titanium	1,102.00
21.	Zirconium	1,040.00
22.	Osmium	1,040.00
23.	Uranium	980.00
24.	Palladium	560.00
25.	Tellurium	490.00
26.	Chromium	490.00
27.	Gold	300.00
28.	Molybdenum	245.00
29.	Platinum	144.00
30.	Thallium	122.50
31.	Iridium	112.00
32.	Tungsten	36.00
33.	Potassium	28.00
34.	Selenium	18.00
35.	Cobalt	8.00
36.	Magnesium	4.50
37.	Bismuth	2.75
38.	Sodium	2.50
39.	Aluminium	34
40.	Manganese	1.10
41.	Cadmium	1.30
42.	Arsenic	40

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